SPORTS MEDICINE

ULTRASOUND

PRP

Cortisone vs PRP Protocols For Sports Medicine

SPORTS MEDICINE ULTRASOUND PRP

PROTOCOLS FOR A SUCCESSFUL PRP PRACTICE

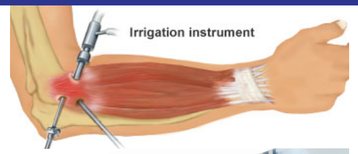
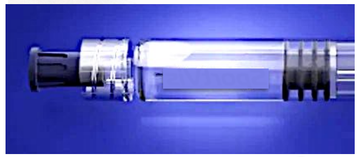
1 SELECT PATIENTS CAREFULLY

2 DO PRP AT THE RIGHT TIME

3 PUT THE PRP IN THE RIGHT SPOT

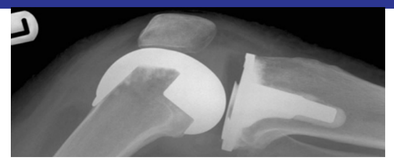
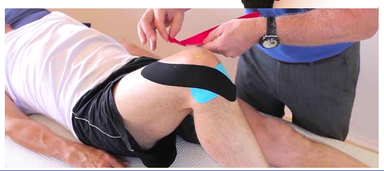
SPORTS MEDICINE ULTRASOUND

TENDON & LIGAMENT TREATMENTS

Treatment	Product	How Many?	Cost	Tendon Health	Top Tips
Surgery		1	20 Physical Therapy Visits + months off work	✗	Infection Risk: 90 days without any injections to that area
BMAC / Adipose		1	$8000	✓	1 treatment usually followed by 1 or 2 PRP
Tenotomy Prolotherapy Platelet-Rich Plasma		3	$100 Tenotomy $300 Prolo $900 PRP	✓	Up to 3 treatments, usually 2 - 4 weeks apart
Tendon Support (HA)		2	$300	✓	2 doses, 1 week apart
Cortisone		Maximum 4 per year	$25	✗	If using very low dose, consider a maximum of 6 times a year
Shockwave / Graston / Active Release		10	$75 per visit	✓	Tissue Injury Risk: OK just before an injection, but not until 1 week after an injection
Needling		20	$75 per visit	✓	Infection Risk: Do not do this 1 week before or 1 weeks after an injections
TENS / Laser		20	$75	✓	No Risk

SPORTS MEDICINE ULTRASOUND

JOINT & CARTILAGE TREATMENTS

Treatment	Product	How Many?	Cost	Joint Health	Top Tips
Surgery			50 Physio Sessions + months off work	✗	Infection Risk: 90 - 180 days without any injections near that joint
BMAC / Adipose		Every 5 Years	$8,000	✓	1 treatment every 5 -10 years usually followed by 1 or 2 PRP
Platelet-Rich Plasma		1 - 2 per year	$900	✓	2 treatments, usually 2 - 4 weeks apart
Cartilage Lubricant		1 - 2 per year	$500	✓	Some may require treatment every 2 months, others only once a year
Cortisone		Maximum 4 per year	$25	✗	If using very low dose, consider a maximum of 6 times a year
Custom-Made Brace			$1500	✓	Tissue Injury Risk: OK just before an injection, but not until 1 week after an injection
Physical Therapy			$75 per visit	✓	Infection Risk: Do not do this 1 week before or 1 weeks after an injections

SPORTS MEDICINE ULTRASOUND PRP

PROTOCOL PART 2

DO PRP AT THE RIGHT TIME

SPORTS MEDICINE ULTRASOUND PRP

SPORTS MEDICINE ULTRASOUND WHAT TO CHOOSE AND WHEN

Frozen Shoulder Possible?	Cortisone to GHJ +/- SAB +/- SS NvBI +/- Hydrodilatation	Physio	
RTC Impingement / Bursitis	SportVis or Low Dose	Physio	PRP / Dextrose
RTC / LHB Tear	Low / High Dose Cortisone	Physio	PRP / Dextrose / Surgery
Shoulder AC Joint	Low / High Dose Cortisone	Physio	PRP / Dextrose / Surgery
Shoulder Disloc / Labral Tear	Physio	Low / High Dose Cortisone	PRP / Dextrose / Surgery
Elbow - Tennis / Golf / Triceps	Physio	SportVis or Low Dose Cort	PRP / Surgery
Wrist - Dorsal / Palmar	Physio	Low / High Dose Cortisone	PRP / Dextrose / Surgery
Spine (C T L or S)	Cortisone / Dextrose / PRP	Physio	Cortisone / Surgery
Hip Labral Tear	Physio	Low / High Dose Cortisone	PRP / Surgery
Gluteal Tendon / GT Bursitis	Physio	Low Dose Cortisone	PRP / Dextrose / Surgery
Hams / Adductors	Physio	Low Dose Cortisone	PRP / Dextrose / Surgery
Patellar / Quads Tendon	SportVis or Low Dose Cort	PRP / Dextrose	PRP / Surgery
Osgood-Schlatter / SLJ	Saline +/- Low Cortisone	PRP / Dextrose	PRP / Surgery
Knee Meniscus Injury	Physio	Low / High Dose Cortisone	PRP / Surgery
Achilles Tendon	SportVis or Low Dose Cort	PRP / Dextrose	PRP / Surgery
Plantar Fasciitis (+TibPost)	Physio	Low Dose Cortisone	PRP / Surgery
Joint / Lig Sprain / Tear	SportVis or Low Dose Cort	PRP / Dextrose	PRP / Dextrose / Surgery
Joint / Swelling	Physio	Low / High Dose Cortisone	PRP / HA

Download a PDF version at sportsmedus.com/prpwebinar. This link is in the chat

SPORTS MEDICINE ULTRASOUND PRP

PROTOCOL PART 3

PUT THE PRP IN THE RIGHT SPOT

SPORTS MEDICINE ULTRASOUND PRP

ROTATOR CUFF

SPORTS MEDICINE ULTRASOUND PRP

SHOULDER: SUPRASPINATUS TENDON

	CORTISONE
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	Any tendinosis / tear / bursitis
SUBOPTIMAL CANDIDATE	Pt with prior cortisone injection to same area with pain relief < 4 weeks
ANESTHETIC	Not needed
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
CORTISONE	Triamcinolone 40mg or Methylprednisolone 40mg
• **SYRINGE**	3mL filled with 2mL Lidocaine 1%
• **NEEDLE**	25g x 1.5"
• **TARGET**	Into the lumen of the bursa
• **TOP TIPS**	
POST PROCEDURE	Follow up QuickDASH at 12 weeks
• **ORAL PAIN MEDS**	Acetaminophen is likely adequate
• **IMMOBILIZE**	No
• **RETURN TO ADLs**	Immediately
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	2 weeks
REPEAT TREATMENT	Minimum 12 weeks interval

	HYALURONIC ACID
TIMING	Anytime
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Full thickness tear with retraction • Very poor strength
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
HYALURONIC ACID	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Treatment is 2 injections, 7 days apart

	PROLOTHERAPY
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Full thickness tear with retraction • Very poor strength
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
PROLOTHERAPY	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Repeat prolo q 4 weeks x 3 - 6 total

	PRP
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Full thickness tear with retraction • Very poor strength
ANESTHETIC	1 part Lidocaine 1% + 9 parts Normal saline or simply use Ropivicaine 0.2%
• **SYRINGE**	3mL
• **NEEDLE**	27g x 1.25"
• **TARGET**	Into the skin, superficial to tendon, and consider a small amount into the tendon itself
PRP	Leukocyte-Poor PRP (Yellow PRP) Aim for 5 Billion Platelets
• **SYRINGE**	5mL
• **NEEDLE**	25g x 1.5”
• **TARGET**	Into tendinosis + tear and around tear
• **TOP TIPS**	Inject maximum 6mL, 3mL is a common amount
POST PROCEDURE	Follow up QuickDASH q 4 weeks x 6
• **ORAL PAIN MEDS**	Acetaminophen+Tramadol/Codeine
• **IMMOBILIZE**	Only if worried about high pain, then sling for 2-3 days
• **RETURN TO ADLs**	The next day
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	Must discuss progress with therapist
REPEAT TREATMENT	Repeat PRP if needed after 8 weeks

SPORTS MEDICINE ULTRASOUND PRP

GHJ ARTHRITIS

SPORTS MEDICINE ULTRASOUND PRP

SHOULDER: GLENOHUMERAL JOINT

	CORTISONE
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	Moderate symptoms (any stage OA)
SUBOPTIMAL CANDIDATE	Pt with prior cortisone injection to same area with pain relief < 4 weeks
ANESTHETIC	Lidocaine 1%
• **SYRINGE**	5mL
• **NEEDLE**	25g x 1.5"
• **TARGET**	Into the skin and superficial muscles, right down to the humerus until certain lidocaine is flowing along humeral head
CORTISONE	Triamcinolone 40mg or Methylprednisolone 40mg
• **SYRINGE**	3mL filled with 2mL Lidocaine 1%
• **NEEDLE**	25g x 2" or 21g x 2"
• **TARGET**	Touching the cartilage of the humerus
• **TOP TIPS**	
POST PROCEDURE	Follow up QuickDASH at 12 weeks
• **ORAL PAIN MEDS**	Acetaminophen is likely adequate
• **IMMOBILIZE**	No
• **RETURN TO ADLs**	Immediately
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	2 weeks
REPEAT TREATMENT	Minimum 12 weeks interval

	HYALURONIC ACID
TIMING	Usually after DX cartilage injury/OA
OPTIMAL CANDIDATE	Mild symptoms without effusion
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • High grade OA • Recurrent effusions
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
HYALURONIC ACID	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	As early as 2 months if needed. Usually 3 - 6 months.

	PROLOTHERAPY
TIMING	Usually after DX cartilage injury / episodes of instability
OPTIMAL CANDIDATE	Mild symptoms / infrequent instability
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • > 10 episodes of instability • Recurrent effusions
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
PROLOTHERAPY	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Repeat prolo q 4 weeks x 3 - 6 total

	PRP
TIMING	Usually after DX cartilage injury / episodes of instability
OPTIMAL CANDIDATE	Mild symptoms / infrequent instability
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • > 10 episodes of instability • Recurrent effusions
ANESTHETIC	1 part Lidocaine 1% + 9 parts Normal saline or simply use Ropivicaine 0.2%
• **SYRINGE**	3mL
• **NEEDLE**	25g x 1.5"
• **TARGET**	Into the skin and superficial muscles, right down to the humerus until certain lidocaine is flowing along humeral head
PRP	Leukocyte-Poor PRP (Yellow PRP) Aim for 5 Billion Platelets
• **SYRINGE**	5mL
• **NEEDLE**	25g x 2" or 21g x 2"
• **TARGET**	Touching the cartilage of the humerus
• **TOP TIPS**	Inject maximum 8mL, 5mL is a common amount
POST PROCEDURE	Follow up QuickDASH q 4 weeks x 6
• **ORAL PAIN MEDS**	Acetaminophen is likely adequate
• **IMMOBILIZE**	Only if worried about high pain, then sling for 2-3 days
• **RETURN TO ADLs**	The next day
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	2 weeks
REPEAT TREATMENT	Repeat PRP if needed after 8 weeks

SPORTS MEDICINE ULTRASOUND PRP

FROZEN SHOULDER

SPORTS MEDICINE ULTRASOUND PRP

SHOULDER: GLENOHUMERAL JOINT

	CORTISONE
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	Moderate symptoms (any stage OA)
SUBOPTIMAL CANDIDATE	Pt with prior cortisone injection to same area with pain relief < 4 weeks
ANESTHETIC	Lidocaine 1%
• **SYRINGE**	5mL
• **NEEDLE**	25g x 1.5"
• **TARGET**	Into the skin and superficial muscles, right down to the humerus until certain lidocaine is flowing along humeral head
CORTISONE	Triamcinolone 40mg or Methylprednisolone 40mg
• **SYRINGE**	3mL filled with 2mL Lidocaine 1%
• **NEEDLE**	25g x 2" or 21g x 2"
• **TARGET**	Touching the cartilage of the humerus
• **TOP TIPS**	
POST PROCEDURE	Follow up QuickDASH at 12 weeks
• **ORAL PAIN MEDS**	Acetaminophen is likely adequate
• **IMMOBILIZE**	No
• **RETURN TO ADLs**	Immediately
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	2 weeks
REPEAT TREATMENT	Minimum 12 weeks interval

	HYALURONIC ACID
TIMING	Usually after DX cartilage injury/OA
OPTIMAL CANDIDATE	Mild symptoms without effusion
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • High grade OA • Recurrent effusions
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
HYALURONIC ACID	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	As early as 2 months if needed. Usually 3 - 6 months.

	PROLOTHERAPY
TIMING	Usually after DX cartilage injury / episodes of instability
OPTIMAL CANDIDATE	Mild symptoms / infrequent instability
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • > 10 episodes of instability • Recurrent effusions
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
PROLOTHERAPY	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Repeat prolo q 4 weeks x 3 - 6 total

	PRP
TIMING	Usually after DX cartilage injury / episodes of instability
OPTIMAL CANDIDATE	Mild symptoms / infrequent instability
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • > 10 episodes of instability • Recurrent effusions
ANESTHETIC	1 part Lidocaine 1% + 9 parts Normal saline or simply use Ropivicaine 0.2%
• **SYRINGE**	3mL
• **NEEDLE**	25g x 1.5"
• **TARGET**	Into the skin and superficial muscles, right down to the humerus until certain lidocaine is flowing along humeral head
PRP	Leukocyte-Poor PRP (Yellow PRP) Aim for 5 Billion Platelets
• **SYRINGE**	5mL
• **NEEDLE**	25g x 2" or 21g x 2"
• **TARGET**	Touching the cartilage of the humerus
• **TOP TIPS**	Inject maximum 8mL, 5mL is a common amount
POST PROCEDURE	Follow up QuickDASH q 4 weeks x 6
• **ORAL PAIN MEDS**	Acetaminophen is likely adequate
• **IMMOBILIZE**	Only if worried about high pain, then sling for 2-3 days
• **RETURN TO ADLs**	The next day
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	2 weeks
REPEAT TREATMENT	Repeat PRP if needed after 8 weeks

SPORTS MEDICINE ULTRASOUND PRP

TENNIS ELBOW

SPORTS MEDICINE ULTRASOUND PRP

ELBOW: COMMON EXTENSOR TENDON

	CORTISONE
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	Any tendinosis / tear
SUBOPTIMAL CANDIDATE	Pt with prior cortisone injection to same area with pain relief < 4 weeks
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
CORTISONE	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Minimum 12 weeks interval

	HYALURONIC ACID
TIMING	Anytime
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 25 % of tendon • Very poor strength
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
HYALURONIC ACID	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Treatment is 2 injections, 7 days apart

	PROLOTHERAPY
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 25 % of tendon • Very poor strength
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
PROLOTHERAPY	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Repeat prolo q 4 weeks x 3 - 6 total

	PRP
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 25 % of tendon • Very poor strength
ANESTHETIC	1 part Lidocaine 1% + 9 parts Normal saline or simply use Ropivicaine 0.2%
• **SYRINGE**	3mL
• **NEEDLE**	27g x 1.25"
• **TARGET**	Into the skin, superficial to tendon, and consider a small amount into the tendon itself
PRP	LR PRP (Red PRP) or LP-PRP (Yellow PRP) Aim for 5 Billion Platelets
• **SYRINGE**	3mL
• **NEEDLE**	25g x 1.5"
• **TARGET**	Into tendinosis + tear and around tear
• **TOP TIPS**	Inject maximum 4mL, 2.5mL is a common amount
POST PROCEDURE	Follow up QuickDASH q 4 weeks x 6
• **ORAL PAIN MEDS**	Acetaminophen+Tramadol/Codeine
• **IMMOBILIZE**	Wrist brace for 2-3 days
• **RETURN TO ADLs**	The next day
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	Must discuss progress with therapist
REPEAT TREATMENT	Repeat PRP if needed after 8 weeks

HIP JOINT

SPORTS MEDICINE ULTRASOUND PRP

HIP: HIP JOINT

	CORTISONE
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	Moderate symptoms (any stage OA)
SUBOPTIMAL CANDIDATE	Pt with prior cortisone injection to same area with pain relief < 4 weeks
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
CORTISONE	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Minimum 12 weeks interval

	HYALURONIC ACID
TIMING	Usually after DX cartilage injury/OA
OPTIMAL CANDIDATE	Mild symptoms without effusion
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • High grade OA • Recurrent effusions
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
HYALURONIC ACID	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	As early as 2 months if needed. Usually 3 - 6 months.

	PROLOTHERAPY
TIMING	Usually after DX cartilage injury/OA
OPTIMAL CANDIDATE	Mild symptoms without effusion
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • High grade OA • Recurrent effusions
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
PROLOTHERAPY	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Repeat prolo q 4 weeks x 3 - 6 total

	PRP
TIMING	Usually after DX cartilage injury/OA
OPTIMAL CANDIDATE	Mild symptoms without effusion
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • High grade OA • Recurrent effusions
ANESTHETIC	1 part Lidocaine 1% + 9 parts Normal saline or simply use Ropivicaine 0.2%
• **SYRINGE**	10mL
• **NEEDLE**	22g x 3.5"
• **TARGET**	Into the skin and superficial muscles, right down to the femur until certain lidocaine is flowing along femoral head
PRP PREP	Leukocyte-Poor PRP (Yellow PRP) Aim for 10 Billion Platelets
• **SYRINGE**	5mL x 1 or 2 syringes
• **NEEDLE**	22g x 3.5"
• **TARGET**	Touch the femur head-neck junction
• **TOP TIPS**	Inject maximum 8mL, 6mL is a common amount
POST PROCEDURE	Follow up iHot12 q 4 weeks x 6
• **ORAL PAIN MEDS**	Acetaminophen is likely adequate
• **IMMOBILIZE**	No
• **RETURN TO ADLs**	Next day
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	2 weeks
REPEAT TREATMENT	Repeat PRP if needed after 8 weeks

SPORTS MEDICINE ULTRASOUND PRP

HIP TENDONS

SPORTS MEDICINE ULTRASOUND PRP

HIP: GLUTEUS MEDIUS TENDON (POSTERIOR BAND)

	CORTISONE
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	Any tendinosis / tear / bursitis
SUBOPTIMAL CANDIDATE	Pt with prior cortisone injection to same area with pain relief < 4 weeks
ANESTHETIC	
• SYRINGE	
• NEEDLE	
• TARGET	
CORTISONE	
• SYRINGE	
• NEEDLE	
• TARGET	
• TOP TIPS	
POST PROCEDURE	
• ORAL PAIN MEDS	
• IMMOBILIZE	
• RETURN TO ADLs	
• RETURN TO THERAPY	
• RETURN TO SPORT	
REPEAT TREATMENT	Minimum 12 weeks interval

	HYALURONIC ACID
TIMING	Anytime
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 25 % of tendon • Very poor strength
ANESTHETIC	
• SYRINGE	
• NEEDLE	
• TARGET	
HYALURONIC ACID	
• SYRINGE	
• NEEDLE	
• TARGET	
• TOP TIPS	
POST PROCEDURE	
• ORAL PAIN MEDS	
• IMMOBILIZE	
• RETURN TO ADLs	
• RETURN TO THERAPY	
• RETURN TO SPORT	
REPEAT TREATMENT	Treatment is 2 injections, 7 days apart

	PROLOTHERAPY
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 25 % of tendon • Very poor strength
ANESTHETIC	
• SYRINGE	
• NEEDLE	
• TARGET	
PROLOTHERAPY	
• SYRINGE	
• NEEDLE	
• TARGET	
• TOP TIPS	
POST PROCEDURE	
• ORAL PAIN MEDS	
• IMMOBILIZE	
• RETURN TO ADLs	
• RETURN TO THERAPY	
• RETURN TO SPORT	
REPEAT TREATMENT	Repeat prolo q 4 weeks x 3 - 6 total

	PRP
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 25 % of tendon • Very poor strength
ANESTHETIC	1 part Lidocaine 1% + 9 parts Normal saline or simply use Ropivicaine 0.2%
• SYRINGE	3mL
• NEEDLE	25g x 1.5"
• TARGET	Into the skin, superficial to tendon, and consider a small amount into the tendon itself
PRP	LR PRP (Red PRP) or LP-PRP (Yellow PRP) Aim for 10 Billion Platelets
• SYRINGE	5mL x 1 or 2 syringes
• NEEDLE	22g x 3.5"
• TARGET	Into tendinosis + tear and around tear
• TOP TIPS	Inject maximum 8mL, 5mL is a common amount
POST PROCEDURE	Follow up VISA-G q 4 weeks x 6
• ORAL PAIN MEDS	Acetaminophen+Tramadol/Codeine
• IMMOBILIZE	No
• RETURN TO ADLs	Next day
• RETURN TO THERAPY	1 week
• RETURN TO SPORT	Must discuss progress with therapist
REPEAT TREATMENT	Repeat PRP if needed after 8 weeks

KNEE JOINT

SPORTS MEDICINE ULTRASOUND PRP

KNEE: KNEE JOINT (SUPRAPATELLAR RECESS)

	CORTISONE
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	Moderate symptoms (any stage OA)
SUBOPTIMAL CANDIDATE	Pt with prior cortisone injection to same area with pain relief < 4 weeks
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
CORTISONE	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Minimum 12 weeks interval

	HYALURONIC ACID
TIMING	Usually after DX cartilage injury/OA
OPTIMAL CANDIDATE	Mild symptoms without effusion
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • High grade OA • Recurrent effusions
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
HYALURONIC ACID	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	As early as 2 months if needed. Usually 3 - 6 months.

	PROLOTHERAPY
TIMING	Usually after DX cartilage injury/OA
OPTIMAL CANDIDATE	Mild symptoms without effusion
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • High grade OA • Recurrent effusions
ANESTHETIC	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
PROLOTHERAPY	
• **SYRINGE**	
• **NEEDLE**	
• **TARGET**	
• **TOP TIPS**	
POST PROCEDURE	
• **ORAL PAIN MEDS**	
• **IMMOBILIZE**	
• **RETURN TO ADLs**	
• **RETURN TO THERAPY**	
• **RETURN TO SPORT**	
REPEAT TREATMENT	Repeat prolo q 4 weeks x 3 - 6 total

	PRP
TIMING	Usually after DX cartilage injury/OA
OPTIMAL CANDIDATE	Mild symptoms without effusion
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • High grade OA • Recurrent effusions
ANESTHETIC	1 part Lidocaine 1% + 9 parts Normal saline or simply use Ropivicaine 0.2%
• **SYRINGE**	3mL
• **NEEDLE**	27g x 1.25"
• **TARGET**	Into the skin and superficial muscles, right into synovial fat pad until certain lidocaine is flowing into the joint fluid
PRP	Leukocyte-Poor PRP (Yellow PRP) Aim for 10 Billion Platelets
• **SYRINGE**	10mL
• **NEEDLE**	22g x 1.5"
• **TARGET**	Into the synovial fluid of the suprapatellar recess
• **TOP TIPS**	Inject maximum 15mL, 8mL is a common amount
POST PROCEDURE	Follow up WOMAC q 4 weeks x 6
• **ORAL PAIN MEDS**	Acetaminophen is likely adequate
• **IMMOBILIZE**	No
• **RETURN TO ADLs**	Next day
• **RETURN TO THERAPY**	1 week
• **RETURN TO SPORT**	2 weeks
REPEAT TREATMENT	Repeat PRP if needed after 8 weeks

SPORTS MEDICINE ULTRASOUND PRP

PATELLAR TENDON

SPORTS MEDICINE ULTRASOUND PRP

KNEE: PATELLAR TENDON

	CORTISONE
TIMING	
OPTIMAL CANDIDATE	Rarely used for this body part
SUBOPTIMAL CANDIDATE	
ANESTHETIC	
• SYRINGE	
• NEEDLE	
• TARGET	
CORTISONE	
• SYRINGE	
• NEEDLE	
• TARGET	
• TOP TIPS	
POST PROCEDURE	
• ORAL PAIN MEDS	
• IMMOBILIZE	
• RETURN TO ADLs	
• RETURN TO THERAPY	
• RETURN TO SPORT	
REPEAT TREATMENT	

	HYALURONIC ACID
TIMING	Anytime
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 10 % of tendon • Very poor strength
ANESTHETIC	
• SYRINGE	
• NEEDLE	
• TARGET	
HYALURONIC ACID	
• SYRINGE	
• NEEDLE	
• TARGET	
• TOP TIPS	
POST PROCEDURE	
• ORAL PAIN MEDS	
• IMMOBILIZE	
• RETURN TO ADLs	
• RETURN TO THERAPY	
• RETURN TO SPORT	
REPEAT TREATMENT	Treatment is 2 injections, 7 days apart

	PROLOTHERAPY
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 10 % of tendon • Very poor strength
ANESTHETIC	
• SYRINGE	
• NEEDLE	
• TARGET	
PROLOTHERAPY	
• SYRINGE	
• NEEDLE	
• TARGET	
• TOP TIPS	
POST PROCEDURE	
• ORAL PAIN MEDS	
• IMMOBILIZE	
• RETURN TO ADLs	
• RETURN TO THERAPY	
• RETURN TO SPORT	
REPEAT TREATMENT	Repeat prolo q 4 weeks x 3 - 6 total

	PRP
TIMING	Not usually in first 6 weeks of pain
OPTIMAL CANDIDATE	No tears (just tendinosis)
SUBOPTIMAL CANDIDATE	• VAS > 7 / 10 with ADLs • Tear > 25 % of tendon • Very poor strength
ANESTHETIC	1 part Lidocaine 1% + 9 parts Normal saline or simply use Ropivicaine 0.2%
• SYRINGE	3mL
• NEEDLE	27g x 1.25"
• TARGET	Into the skin, superficial to tendon, and consider a small amount into the tendon itself
PRP	LR PRP (Red PRP) or LP-PRP (Yellow PRP) Aim for 2.5 Billion Platelets
• SYRINGE	3mL
• NEEDLE	25g x 1.5"
• TARGET	Into tendinosis + tear and around tear
• TOP TIPS	Inject maximum 4mL, 2mL is a common amount
POST PROCEDURE	Follow up VISA-P q 4 weeks x 6
• ORAL PAIN MEDS	Acetaminophen+Tramadol/Codeine
• IMMOBILIZE	No
• RETURN TO ADLs	Next day
• RETURN TO THERAPY	1 week
• RETURN TO SPORT	Must discuss progress with therapist
REPEAT TREATMENT	Repeat PRP if needed after 8 weeks

SPORTS MEDICINE ULTRASOUND PRP

A Collection of Helpful PRP Studies

Body Part	Condition	Title	Title	Citation
Shoulder	Shoulder Osteoarthritis	https://pmrjabstracts.c	Efficacy of Ultrasound-Guided Glenohumeral Joint Injections of Platelet-Rich Plasma Versus Hyaluronic Acid	Kirschner J, et al. PM&R J. 2020.
Shoulder	Rotator Cuff Tear	https://medicaljournals	Platelet-Rich Plasma Injection in Non-Operative Treatment of Partial-Thickness Rotator Cuff Tears: A Systemati	Zhu et al., Journal of Rehabilitation Medicine, 2022
Shoulder	Rotator Cuff Tear	https://josr-online.bior	Comparative Efficacy of Platelet-Rich Plasma Injection Versus PRP Combined with Vitamin C Injection for Parti	Mohammadivahedi et al., Journal of Orthopaedic Surgery and Research, 2024
Shoulder	Rotator Cuff Tear	https://erar.springerop	Efficacy of Platelet-Rich Plasma Injection in Comparison to Physical Therapy for Treatment of Chronic Partial S	Ahmed Serya et al., Egyptian Rheumatology and Rehabilitation, 2021
Shoulder	Rotator Cuff Tear	https://pmc.ncbi.nlm.r	Platelet-rich plasma versus corticosteroid injections for rotator cuff tendinopathy: a comparative study with up	Annaniemi et al., Clinics in Shoulder and Elbow, 2022
Shoulder	Rotator Cuff Tear	https://journals.sagepu	Platelet-Rich Plasma Injections in the Treatment of Chronic Rotator Cuff Tendinopathy: A Randomized Controlle	Kesikburun et al., American Journal of Sports Medicine, 2013
Shoulder	Biceps Tendinitis	https://juniperpublishe	Is Single Platelet-Rich Plasma Injection Effective for Management of Long Head of Biceps Tendinitis: A Case C	Ashraf E, Ahmed S. Ortho Rheum Open Access J. 2021.
Shoulder	Tendinopathy	https://clinmedjournals	Effectiveness of Ultrasound Guided Platelet Rich Plasma Injection in Comparison with Corticosteroid Injection	Singh SA, Singh AJ. Int J Sports Exerc Med. 2024;10:268.
Shoulder	Adhesive Capsulitis	https://bmcmusculosk	The Clinical Efficacy and Safety of Platelet-Rich Plasma on Frozen Shoulder: A Systematic Review and Meta-A	Zhang et al., BMC Musculoskeletal Disorders, 2024
Shoulder	Adhesive Capsulitis	https://link.springer.co	Efficacy of Platelet-Rich Plasma Injections in Patients with Adhesive Capsulitis of the Shoulder	Ünlü et al., International Orthopaedics, 2021
Shoulder	Adhesive Capsulitis	https://www.mkscienc	Platelet-Rich Plasma Injections for Frozen Shoulder: Efficacy in Pain Reduction and Shoulder Function Improve	Ahmed S., Science Set Journal of Cardiology Research, 2024
Shoulder	Adhesive Capsulitis	https://www.sciencedi	Outcomes of Platelet-Rich Plasma Injections in the Adhesive Capsulitis of Shoulder: A Randomized Controlled	Kumar et al., Journal of Orthopaedics, 2023
Shoulder	Adhesive Capsulitis	https://www.orthopae	The Impact of Platelet-Rich Plasma on the Treatment of Frozen Shoulder	Meena et al., International Journal of Orthopaedics Research, 2022
Elbow	Large Joints	https://bmcmusculosk	Platelet-rich plasma treatment for large joint osteoarthritis: retrospective study highlighting a possible treatment	Schwitzguébel A, et al. BMC Musculoskelet Disord. 2025;26:412.
Elbow	Tennis Elbow	https://link.springer.co	Comparison of efficacy of ultrasound-guided platelet rich plasma injection versus dry needling in lateral epicon	Sharma GK, et al. J Ultrasound. 2024;27:315–321.
Elbow	Tennis Elbow	https://clinmedjournals	The Role of Needle Fenestration with Platelet-Rich Plasma in Chronic Extensor Carpi Radialis Brevis Tendinosis	Clinical Archives of Bone and Joint Diseases. 2020;4(1):013.
Elbow	Tennis Elbow	https://www.jsesintern	Minimally invasive needle tenotomy vs. platelet rich plasma injection in the treatment of medial and lateral epic	JSES Int. 2024;8(3):375–382.
Elbow	Distal Biceps Tendinitis	https://www.academia	Single injection of platelet-rich plasma (PRP) for the treatment of refractory distal biceps tendonitis: long-term r	Sanli I, et al. Knee Surg Sports Traumatol Arthrosc. 2016;24(7):2308–2313.
Elbow	Unspecified	https://link.springer.co	Regenerative Medicine for the Elbow	SpringerLink. 2020; Chapter 9.
Elbow	Distal Biceps Tendinitis	https://www.researchg	Single Injection of Platelet-Rich Plasma (PRP) for the Treatment of Refractory Distal Biceps Tendonitis	Sanli et al., Knee Surgery, Sports Traumatology, Arthroscopy, 2015
Elbow	Distal Biceps Tendinitis	https://www.houstons	Ultrasound-Guided Platelet-Rich Plasma Injection for Distal Biceps Tendinopathy	Houston Sports Medicine
Elbow	Medial Elbow	https://www.prpinjecti	Platelet-Rich Plasma Is an Equal Alternative to Surgery in the Treatment of Medial Epicondylitis	PRP Injection Australia
Elbow	Triceps Tendson	https://www.researchg	Rehabilitation of a Partially Torn Distal Triceps Tendon After Platelet-Rich Plasma Injection: A Case Report	International Journal of Sports Physical Therapy
Foot/Ankl	Ankle Osteoarthritis/Sp	https://jamanetwork.c	Effect of Platelet-Rich Plasma Injections vs Placebo on Ankle Symptoms and Function in Patients With Ankle C	Repetto et al., JAMA. 2021;326(2):137-144.
Foot/Ankl	Ankle Osteoarthritis/Sp	https://www.jfas.org/a	Efficacy and Safety of a Single Intra-articular Injection of Platelet-Rich Plasma for Patients With Ankle Osteoarth	Lin et al., J Foot Ankle Surg. 2020;59(4):586-592.
Foot/Ankl	Ankle Sprain	https://www.sciencedi	Treatment of Lateral Ankle Sprain With Platelet-Rich Plasma: A Randomized Clinical Study	Rowden et al., Foot Ankle Surg. 2020;26(5):540-546.
Foot/Ankl	Ankle Osteoarthritis/Sp	https://www.mdpi.com	Platelet-Rich Plasma Injections in Chronic Lateral Ankle Instability: A Retrospective Study	Kim et al., Biomedicines. 2023;11(5):963.
Foot/Ankl	Achilles Tendinopathy	https://jamanetwork.c	Effect of Platelet-Rich Plasma Injection vs Sham Injection on Tendon Dysfunction in Patients With Chronic Midp	Kearney et al., JAMA. 2021;326(2):137-144.
Foot/Ankl	Achilles Tendinopathy	https://link.springer.co	Platelet-Rich Plasma in Chronic Achilles Tendinopathy: A Systematic Review	Desouza et al., Eur J Orthop Surg Traumatol. 2023;33(9):3255-3265.
Foot/Ankl	Plantar Fasciitis	https://josr-online.bior	Outcomes of Platelet-Rich Plasma for Plantar Fasciopathy: A Best-Evidence Synthesis	Yu et al., J Orthop Surg Res. 2020;15:432.
Knee	Knee Osteoarthritis	https://jamanetwork.c	Effect of Intra-articular Platelet-Rich Plasma vs Placebo Injection on Pain and Medial Tibial Cartilage Volume in	Hunter DJ, et al. JAMA. 2021;326(20):2021-2030.
Knee	Meniscal Tear	https://www.sciencedi	Treatment of Degenerative Meniscal Tear with Intrameniscal Injection of Platelet-Rich Plasma	Cugat R, et al. Diagn Interv Imaging. 2020;101(3):169-176.
Knee	MCL	https://jcdr.net/articles	Effectiveness of Ultrasound-Guided Platelet-Rich Plasma Injection vs Pulsed Ultrasound Therapy in Medial Col	Kumar V, et al. J Clin Diagn Res. 2024;18(1):RC01-RC05.
Knee	Quads Tendinopathy	https://wmjonline.org/	Platelet-Rich Plasma Injection for Quadriceps Tendinopathy: A Case Report	Wagner T. WMJ. 2021;120(1):37-39.
Knee	Patellar Tendinopathy	https://pmc.ncbi.nlm.r	Platelet-rich plasma injection in the treatment of patellar tendinopathy: a systematic review and meta-analysis	Barman A, et al. Knee Surg Relat Res. 2022 May 4;34(1):22.
Wrist/Han	Large joints	https://bmcmusculosk	Platelet-rich plasma treatment for large joint osteoarthritis: retrospective study highlighting a possible treatment	Schwitzguébel A, et al. BMC Musculoskelet Disord. 2025;26:412.
Wrist/Han	TFCC	https://www.thieme-c	Efficacy of Ultrasound-Guided Injection of Platelet-Rich Plasma in Triangular Fibrocartilage Complex Tear: A Pr	Singh DK, et al. Seminars in Musculoskeletal Radiology. 2020;24(S 02):S9-S32
Wrist/Han	TFCC	https://www.hkimm.hk	Ultrasound-Guided Platelet-Rich Plasma Injection for Triangular Fibrocartilage Complex Injury: A Retrospective	Hung C-Y, et al. Asia Pacific Journal of Pain. 2025.
Wrist/Han	Carpal Tunnel Syndron	https://erar.springerop	Efficacy of Platelet-Rich Plasma Injection in Mild and Moderate Carpal Tunnel Syndrome	El-Tamawy MS, et al. Egyptian Rheumatology and Rehabilitation. 2020;47:1-7.
Wrist/Han	Carpal Tunnel Syndron	https://ejnpn.springerc	Platelet-Rich Plasma Injection Versus Surgical and Medical Treatment of Carpal Tunnel Syndrome	Shaat M, et al. The Egyptian Journal of Neurology, Psychiatry and Neurosurge
Hip	Osteoarthritis	https://bmcmusculosk	Platelet-rich plasma treatment for large joint osteoarthritis: retrospective study highlighting a possible treatment	Schwitzguébel A, et al. BMC Musculoskelet Disord. 2025;26:412.
Hip	Hip Osteoarthritis	https://bmcmusculosk	Comparison between the effects of ultrasound guided intra-articular injections of platelet-rich plasma (PRP), hig	Nouri F, et al. BMC Musculoskelet Disord. 2022;23:856.
Hip	Hip Labral Tear	https://pubmed.ncbi.n	Use of Platelet-Rich Plasma for the Treatment of Acetabular Labral Tear: A Pilot Study	De Luigi, et cal. American Journal of Physical Medicine and Reabiliation, 2019
Hip	Glute Med and Min Te	https://asipp.org/wp-c	Leucocyte-Rich Platelet-Rich Plasma Treatment of Gluteus Medius and Minimus Tendinopathy: A Double-Blind	Fitzpatrick J, et al. Am J Sports Med. 2019.
Hip	Glute Med Tendinopati	https://pubmed.ncbi.n	Platelet-Rich Plasma Injections With Needle Tenotomy for Gluteus Medius Tendinopathy: A Registry Study With	Lee JJ, et al. Orthopaedic Journal of Sports Medicine. 2016

SPORTS MEDICINE ULTRASOUND

REGENERATIVE SPORT MEDICINE

A SUMMARY OF EVIDENCE FOR:

JOINT

KNEE ARTHRITIS

TENDON

TENNIS ELBOW
ROTATOR CUFF
ACHILLES TENDON

FASCIA

PLANTAR FASCIITIS

SPORTS MEDICINE ULTRASOUND PRP

Knee Arthritis

2017 Study in Boston, MA

70 Patients who got 6 doses of cortisone lost significantly more cartilage compared to saline injections.

JAMA. 2017 May 16;317(19):1967-1975. doi: 10.1001/jama.2017.5283.

Effect of Intra-articular Triamcinolone vs Saline on Knee Cartilage Volume and Pain in Patients With Knee Osteoarthritis: A Randomized Clinical Trial.

McAlindon TE[1], LaValley MP[2], Harvey WF[1], Price LL[3], Driban JB[1], Zhang M[1], Ward RJ[4].

Abstract

IMPORTANCE: Synovitis is common and is associated with progression of structural characteristics of knee osteoarthritis. Intra-articular corticosteroids could reduce cartilage damage associated with synovitis but might have adverse effects on cartilage and periarticular bone.

OBJECTIVE: To determine the effects of intra-articular injection of 40 mg of triamcinolone acetonide every 3 months on progression of cartilage loss and knee pain.

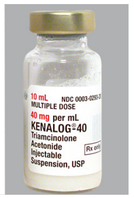
DESIGN, SETTING, AND PARTICIPANTS: Two-year, randomized, placebo-controlled, double-blind trial of intra-articular triamcinolone vs saline for symptomatic knee osteoarthritis with ultrasonic features of synovitis in 140 patients. Mixed-effects regression models with a random intercept were used to analyze the longitudinal repeated outcome measures. Patients fulfilling the American College of Rheumatology criteria for symptomatic knee osteoarthritis, Kellgren-Lawrence grades 2 or 3, were enrolled at Tufts Medical Center beginning February 11, 2013; all patients completed the study by January 1, 2015.

INTERVENTIONS: Intra-articular triamcinolone (n = 70) or saline (n = 70) every 12 weeks for 2 years.

MAIN OUTCOMES AND MEASURES: Annual knee magnetic resonance imaging for quantitative evaluation of cartilage volume (minimal clinically important difference not yet defined), and Western Ontario and McMaster Universities Osteoarthritis index collected every 3 months (Likert pain subscale range, 0 [no pain] to 20 [extreme pain]; minimal clinically important improvement, 3.94).

RESULTS: Among 140 randomized patients (mean age, 58 [SD, 8] years, 75 women [54%]), 119 (85%) completed the study. Intra-articular triamcinolone resulted in significantly greater cartilage volume loss than did saline for a mean change in index compartment cartilage thickness of -0.21 mm vs -0.10 mm (between-group difference, -0.11 mm; 95% CI, -0.20 to -0.03 mm); and no significant difference in pain (-1.2 vs -1.9; between-group difference, -0.6; 95% CI, -1.6 to 0.3). The saline group had 3 treatment-related adverse events compared with 5 in the triamcinolone group and had a small increase in hemoglobin A1c levels (between-group difference, -0.2%; 95% CI, -0.5% to -0.007%).

CONCLUSIONS AND RELEVANCE: Among patients with symptomatic knee osteoarthritis, 2 years of intra-articular triamcinolone, compared with intra-articular saline, resulted in significantly greater cartilage volume loss and no significant difference in knee pain. These findings do not support this treatment for patients with symptomatic knee osteoarthritis.



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Knee Arthritis

2016 Study in Columbia, Missouri

3 Treatments of PRP reduced knee pains by 78% within weeks.

It lasted up to 1 year.

Am J Sports Med. 2016 Apr;44(4):884-91. doi: 10.1177/0363546515624678. Epub 2016 Feb 1.

Intra-articular Autologous Conditioned Plasma Injections Provide Safe and Efficacious Treatment for Knee Osteoarthritis: An FDA-Sanctioned, Randomized, Double-blind, Placebo-controlled Clinical Trial.

Smith PA[1].

Author information

Abstract

BACKGROUND: Platelet-rich plasma (PRP) injections have become an intriguing treatment option for osteoarthritis (OA), particularly OA of the knee. Despite the plethora of PRP-related citations, there is a paucity of high-level evidence that is comparable, cohort specific, dose controlled, injection protocol controlled, and double-blinded.

PURPOSE: To determine the safety and efficacy of leukocyte-poor PRP autologous conditioned plasma (ACP) for knee OA treatment through a feasibility trial regulated by the US Food and Drug Administration (FDA).

STUDY DESIGN: Randomized controlled trial; Level of evidence, 1.

METHODS: In accordance with FDA protocol, patient selection was based on strict inclusion/exclusion criteria; 114 patients were screened, and 30 were ultimately included in the study. These patients were randomized to receive either ACP (n = 15) or saline placebo (n = 15) for a series of 3 weekly injections. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) scores served as the primary efficacy outcome measure. Patients were followed for 1 year.

RESULTS: No adverse events were reported for ACP administration. Furthermore, the results demonstrated no statistically significant difference in baseline WOMAC scores between the 2 groups. However, in the ACP group, WOMAC scores at 1 week were significantly decreased compared with baseline scores, and the scores for this group remained significantly lower throughout the study duration. At the study conclusion (12 months), subjects in the ACP group had improved their overall WOMAC scores by 78% from their baseline score, compared with 7% for the placebo group.

CONCLUSION: ACP is safe and provides quantifiable benefits for pain relief and functional improvement with regard to knee OA. No adverse events were reported for ACP administration. After 1 year, WOMAC scores for the ACP subjects had improved by 78% from their baseline score, whereas scores for the placebo control group had improved by only 7%. Other joints affected with OA may also benefit from this treatment.

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2 mos 70% **6 mos 70%** **12 mos 78%**

Knee Arthritis

2016 Study in Malaga, Spain

55 patients over 6 months?

PRP as good as HA except in Grade 4.

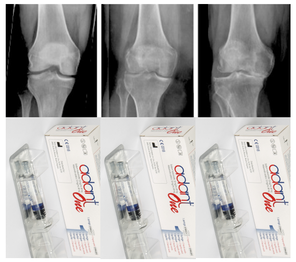
Int. J. Mol. Sci. **2016**, *17*(7), 1064; doi:10.3390/ijms17071064 Open Access Article

Intra-Articular Injections of Platelet-Rich Plasma versus Hyaluronic Acid in the Treatment of Osteoarthritic Knee Pain: A Randomized Clinical Trial in the Context of the Spanish National Health Care System

Intra-articular injection of platelet-rich plasma (PRP) has been established as a suitable treatment for knee osteoarthritis. Here, we present a double-blind randomized controlled clinical trial, conducted in a public Hospital of the Spanish National Health Care System, to evaluate the efficacy of injecting autologous PRP versus hyaluronic acid (HA) in knee osteoarthritis. PRP was manufactured in Malaga's Regional Blood Center (Spain). Patients that met the eligibility criteria were randomized into a PRP group or a HA group. Pain and functional improvements were assessed pre- and post-treatment (three and six months follow-up) using the Visual Analogue Scale (VAS); the Knee and Osteoarthritis Outcome System (KOOS) scale and the European Quality of Life scale (EUROQOL). Both groups presented pain reduction at six months. The VAS scores for the PRP group improved by at least 50% from their initial value, particularly at three months following the final infiltration, with results resembling those of the HA group at six months. PRP was more effective in patients with lower osteoarthritis grades. Both treatments improved pain in knee osteoarthritis patients without statistically significant differences between them. However, PRP injection was proved to improve pain three months after the final infiltration and to be more effective in lower osteoarthritis grades. View Full-Text

Arthritis Grade

2 3 4



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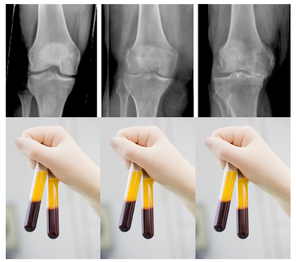
Arthritis Grade

2 3 4



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Download a PDF version at sportsmedus.com/prpwebinar. This link is in the chat

Knee Arthritis

2016 Study in Chicago, IL

111 patients over 1 year.

HA is good, but

PRP is better at reducing symptoms.

✔

✔

Hyaluronic Acid Versus Platelet-Rich Plasma

A Prospective, Double-Blind Randomized Controlled Trial Comparing Clinical Outcomes and Effects on Intra-articular Biology for the Treatment of Knee Osteoarthritis

Brian J. Cole,*†‡§‖¶ MD, MBA, Vasili Karas,# MD, MS, Kristen Hussey,† MS, Kyle Pilz,†¶ MMS, PA-C, and Lisa A. Fortier,** DVM, PhD, DACVS
Investigation performed at the Rush University Medical Center, Chicago, Illinois, USA

Background: The use of platelet-rich plasma (PRP) for the treatment of osteoarthritis (OA) has demonstrated mixed clinical outcomes in randomized controlled trials when compared with hyaluronic acid (HA), an accepted nonsurgical treatment for symptomatic OA. Biological analysis of PRP has demonstrated an anti-inflammatory effect on the intra-articular environment.

Purpose: To compare the clinical and biological effects of an intra-articular injection of PRP with those of an intra-articular injection of HA in patients with mild to moderate knee OA.

Study Design: Randomized controlled trial; Level of evidence, 1.

Methods: A total of 111 patients with symptomatic unilateral knee OA received a series of either leukocyte-poor PRP or HA injections under ultrasound guidance. Clinical data were collected before treatment and at 4 time points across a 1-year period. Synovial fluid was also collected for analysis of proinflammatory and anti-inflammatory markers before treatment and at 12 and 24 weeks after treatment. Several measures were used to assess results: (1) Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain subscale; (2) International Knee Documentation Committee (IKDC) subjective knee evaluation, visual analog scale (VAS) for pain, and Lysholm knee score; and (3) difference in intra-articular biochemical marker concentrations.

Results: There were 49 patients randomized to treatment with PRP and 50 randomized to treatment with HA. No difference was seen between the groups in the primary outcome measure (WOMAC pain score). In the secondary outcome measure, linear contrasts identified a significantly higher IKDC score in the PRP group compared with the HA group at 24 weeks (mean ± standard error [SE], 65.5 ± 3.6 vs 55.8 ± 3.8, respectively; $P = .013$) and at final follow-up (52 weeks) (57.6 ± 3.37 vs 46.6 ± 3.76, respectively; $P = .003$). Linear contrasts also identified a statistically lower VAS score in the PRP group versus the HA group at 24 weeks (mean ± SE, 34.6 ± 3.24 vs 48.6 ± 3.7, respectively; $P = .0096$) and 52 weeks (44 ± 4.6 vs 57.3 ± 3.8, respectively; $P = .0039$). An examination of fixed effects showed that patients with mild OA and a lower body mass index had a statistically significant improvement in outcomes. In the biochemical analysis, differences between groups approached significance for interleukin-1β (mean ± SE, 0.14 ± 0.05 pg/mL [PRP] vs 0.34 ± 0.16 pg/mL [HA]; $P = .06$) and tumor necrosis factor α (0.08 ± 0.01 pg/mL [PRP] vs 0.2 ± 0.18 pg/mL [HA]; $P = .068$) at 12-week follow-up.

Conclusion: We found no difference between HA and PRP at any time point in the primary outcome measure: the patient-reported WOMAC pain score. Significant improvements were seen in other patient-reported outcome measures, with results favoring PRP over HA. Preceding a significant difference in subjective outcomes favoring PRP, there was a trend toward a decrease in 2 proinflammatory cytokines, which suggest that the anti-inflammatory properties of PRP may contribute to an improvement of symptoms.

Knee Arthritis

2015 Study in Bologna, Italy

230 Patients over 24 weeks?

PRP is equal to HA at 24 weeks.

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Am J Sports Med. 2015 Jul;43(7):1575-82. doi: 10.1177/0363546515582027. Epub 2015 May 7.

Platelet-Rich Plasma Intra-articular Knee Injections Show No Superiority Versus Viscosupplementation: A Randomized Controlled Trial.

Filardo G[1], Di Matteo B[2], Di Martino A[1], Merli ML[1], Cenacchi A[3], Fornasari P[3], Marcacci M[1], Kon E[4].
Author information

Abstract

BACKGROUND: Osteoarthritis (OA) is a common disease that will affect almost half the population at some point in their lives through pain and decreased functional capacity. New nonoperative options are being proposed to treat earlier stages of joint degeneration to provide symptomatic relief and delay surgical intervention.

PURPOSE: To evaluate the benefit provided by platelet-rich plasma (PRP) injections to treat knee joint degeneration in comparison with hyaluronic acid (HA), the most common injective treatment currently adopted for this condition.

STUDY DESIGN: Randomized controlled trial; Level of evidence, 1.

METHODS: A total of 443 patients were screened, and 192 of them were enrolled in the study according to the following inclusion criteria: (1) unilateral symptomatic knee with history of chronic pain (at least 4 months) or swelling and (2) imaging findings of degenerative changes (Kellgren-Lawrence score of 0-3 at radiographs or MRI evidence of degenerative chondropathy). Patients underwent 3 weekly intra-articular injections of either PRP or HA. Patients were prospectively evaluated at baseline and then at 2, 6, and 12 months of follow-up using the International Knee Documentation Committee (IKDC) subjective score (main outcome), Knee injury and Osteoarthritis Outcome Score, EuroQol visual analog scale, and Tegner score. Range of motion, transpatellar circumference, patient satisfaction, and adverse events were also recorded.

RESULTS: Two patients reported severe pain and swelling after HA injections, while no major adverse events were noted in the PRP group. However, PRP presented overall significantly more postinjection swelling and pain. Both treatments proved to be effective in improving knee functional status and reducing symptoms: the IKDC score in the PRP group rose from 52.4 ± 14.1 to 66.2 ± 16.7 at 12 months ($P < .0005$), and in the HA group it rose from 49.6 ± 13.0 to 64.2 ± 18.0 at 12 months ($P < .0005$). A similar trend was observed for all the clinical scores used. The comparative analysis of the 2 treatments showed no significant intergroup difference at any follow-up evaluation in any of the clinical scores adopted.

CONCLUSION: PRP does not provide a superior clinical improvement with respect to HA, and therefore it should not be preferred to viscosupplementation as injective treatment of patients affected by knee cartilage degeneration and OA.

Knee Arthritis

2014 Study in Chicago, IL

Human knee cells were removed during knee replacement surgery.

PRP acted as an anti-inflammatory and as a Joint Lubricant stimulant.

HA was less effective.

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✔

Am J Sports Med. 2014 Jan;42(1):35-41. doi: 10.1177/0363546513507766. Epub 2013 Nov 5.

The anti-inflammatory and matrix restorative mechanisms of platelet-rich plasma in osteoarthritis.

Sundman EA[1], Cole BJ, Karas V, Della Valle C, Tetreault MW, Mohammed HO, Fortier LA.
Author information

Abstract

BACKGROUND: Intra-articular (IA) treatment with platelet-rich plasma (PRP) for osteoarthritis (OA) results in improved patient-reported pain and function scores.

PURPOSE: To measure the effects of PRP and high molecular weight hyaluronan (HA) on the expression of anabolic and catabolic genes and on the secretion of nociceptive and inflammatory mediators from OA cartilage and synoviocytes.

STUDY DESIGN: Controlled laboratory study.

METHODS: Synovium and cartilage harvested from patients undergoing total knee arthroplasty were co-cultured with media of PRP or HA. Tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6), and IL-1β were measured in the media by enzyme-linked immunosorbent assay. Hyaluronan synthase-2 (HAS-2), matrix metalloproteinase-1 (MMP-1), MMP-13, and TNF-α genes were measured in synoviocytes by reverse transcription polymerase chain reaction (RT-PCR). Collagen type I α1 (COL1A1), COL2A1, aggrecan (ACAN), and MMP-13 gene expression were measured in cartilage by quantitative RT-PCR.

RESULTS: Media TNF-α concentration was decreased in PRP and HA compared with control cultures (PRP = 6.94 pg/mL, HA = 6.39 pg/mL, control = 9.70 pg/mL; $P \le .05$). Media IL-6 concentration was decreased in HA compared with PRP and control (HA = 5027 pg/mL, PRP = 5899 pg/mL, control = 5613 pg/mL; $P \le .05$). Media IL-1β was below detectable concentrations (<0.1 pg/mL) in all samples. Synoviocyte MMP-13 expression was decreased in PRP compared with HA and control (PRP = 10.1, HA = 12.8, control = 13.5; $P \le .05$). Synoviocyte HAS-2 expression was increased in PRP compared with HA and control (PRP = 12.1, HA = 9.8, control = 8.7; $P \le .05$). Cartilage ACAN expression was increased in PRP compared with HA, but neither was different from control (PRP = 8.8, HA = 7.7, control = 7.6; $P \le .05$); COL1A1 expression was increased in HA compared with PRP, but neither was different from control (PRP = 14.9, HA = 13.5, control = 12.9; $P \le .05$). Neither platelet nor leukocyte concentration had a significant effect on outcome measurements (gene or protein expression data) in cartilage or synoviocytes ($P > .05$).

CONCLUSION: Both PRP and HA treatments of OA joint tissues result in decreased catabolism, but PRP treatment also resulted in a significant reduction of MMP-13, an increase in HAS-2 expression in synoviocytes, and an increase in cartilage synthetic activity compared with HA. These results indicate that PRP acts to stimulate endogenous HA production and decrease cartilage catabolism. Platelet-rich plasma showed similar effects as HA in the suppression of inflammatory mediator concentration and expression of their genes in synoviocytes and cartilage.

CLINICAL RELEVANCE: The antinociceptive and anti-inflammatory activities of PRP support its use in OA joints to reduce pain and modulate the disease process. This study supports further clinical investigations of IA PRP for the treatment of OA.

Download a PDF version at sportsmedus.com/prpwebinar. This link is in the chat

Knee Arthritis

2012 Study in Milan, Italy

In a group of 32-60yo athletes with cartilage damage, ability to participate in sport went up 52% after 2 PRP injections.

Sports Health. 2012 Mar; 4(2): 162–172.
doi: 10.1177/1941738111431801
PMCID: PMC3435904

Platelet-Rich Plasma Treatment in Symptomatic Patients With Knee Osteoarthritis

Preliminary Results in a Group of Active Patients

Alberto Gobbi, MD,* Georgios Karnatzikos, MD, Vivek Mahajan, MD, and Somanna Malchira, MD

Background:

With increasing frequency, platelet-rich plasma (PRP) preparations have been used to treat cartilage lesions to regenerate tissue homeostasis and retard the progression of knee osteoarthritis (OA).

Materials and Methods:

Fifty patients with knee OA were followed for a minimum of 12 months. All were treated with 2 intra-articular injections of autologous PRP. Twenty-five patients had undergone a previous operative intervention for cartilage lesions, whereas 25 had not. Operated patients had undergone either cartilage shaving or microfracture. Multiple evaluative scores were collected at pretreatment and at 6 and 12 months posttreatment. The required sample of patients was determined beforehand by using statistical power analysis; International Knee Documentation Committee (subjective) score was defined as the primary parameter. A P value of less than 0.05 was considered statistically significant. General linear model–repeated measure test evaluated within-time improvement for each variable for all patients. Post hoc test with Bonferroni adjustment for multiple comparisons was performed to investigate the significance in improvement within time evaluations for each variable for the total sample. The differences in improvement between operated and nonoperated patients were also investigated, as were those between sexes.

Results:

All patients showed significant improvement in all scores at 6 and 12 months ($P < 0.01$) and returned to previous activities. No significant difference in improvement was found between the evaluated subgroups ($P < 0.01$).

Conclusions:

The PRP treatment showed positive effects in patients with knee OA. Operated and nonoperated patients showed significant improvement by means of diminishing pain and improved symptoms and quality of life.

Clinical Relevance:

There are only a few studies of PRP treatment for cartilage on osteoarthritic knees. Different PRP products might be more or less appropriate to treat different types of tissues and pathologies. The clinical efficacy of PRP remains under debate, and a standardized protocol has not yet been established.

✔ 6 mos ✔ 12 mos

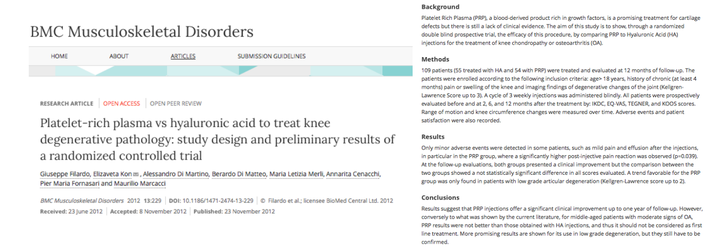
Knee Arthritis

2012 Study in Bologna, Italy

BMC Musculoskeletal Disorders

109 Patients over 1 year?

PRP equal to or better than HA in all stages of arthritis



BMC Musculoskeletal Disorders

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Platelet-rich plasma vs hyaluronic acid to treat knee degenerative pathology: study design and preliminary results of a randomized controlled trial

Giuseppe Filardo, Elizaveta Kon, Alessandro Di Martino, Berardo Di Matteo, Maria Letizia Merli, Annarita Cenacchi, Pier Maria Fornasari and Maurilio Marcacci

BMC Musculoskeletal Disorders 2012 13:229 | DOI: 10.1186/1471-2474-13-229 | © Filardo et al.; licensee BioMed Central Ltd. 2012
Received: 23 June 2012 | Accepted: 8 November 2012 | Published: 23 November 2012

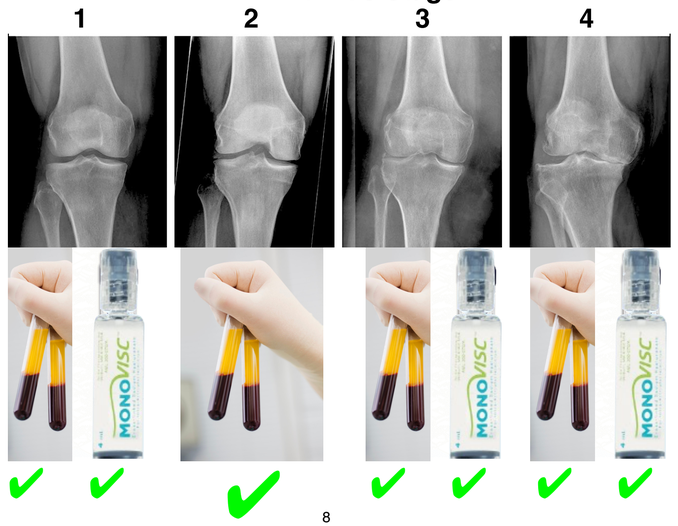
Background
Platelet Rich Plasma (PRP), a blood-derived product rich in growth factors, is a promising treatment for cartilage defects but there is still a lack of clinical evidence. The aim of this study is to show, through a randomized double blind prospective trial, the efficacy of this procedure, by comparing PRP to Hyaluronic Acid (HA) injections for the treatment of knee chondropathy or osteoarthritis (OA).

Methods
109 patients (55 treated with HA and 54 with PRP) were treated and evaluated at 12 months of follow-up. The patients were enrolled according to the following inclusion criteria: age> 18 years, history of chronic (at least 4 months) pain or swelling of the knee and imaging findings of degenerative changes of the joint (Kellgren-Lawrence Score up to 3). A cycle of 3 weekly injections was administered blindly. All patients were prospectively evaluated before and at 2, 6, and 12 months after the treatment by: IKDC, EQ-VAS, TEGNER, and KOOS scores. Range of motion and knee circumference changes were measured over time. Adverse events and patient satisfaction were also recorded.

Results
Only minor adverse events were detected in some patients, such as mild pain and effusion after the injections, in particular in the PRP group, where a significantly higher post-injective pain reaction was observed (p=0.039). At the follow-up evaluations, both groups presented a clinical improvement but the comparison between the two groups showed a not statistically significant difference in all scores evaluated. A trend favorable for the PRP group was only found in patients with low grade articular degeneration (Kellgren-Lawrence score up to 2).

Conclusions
Results suggest that PRP injections offer a significant clinical improvement up to one year of follow-up. However, conversely to what was shown by the current literature, for middle-aged patients with moderate signs of OA, PRP results were not better than those obtained with HA injections, and thus it should not be considered as first line treatment. More promising results are shown for its use in low grade degeneration, but they still have to be confirmed.

Arthritis Stage



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SPORTS MEDICINE ULTRASOUND

REGENERATIVE SPORT MEDICINE

A SUMMARY OF EVIDENCE FOR:

JOINT

KNEE ARTHRITIS

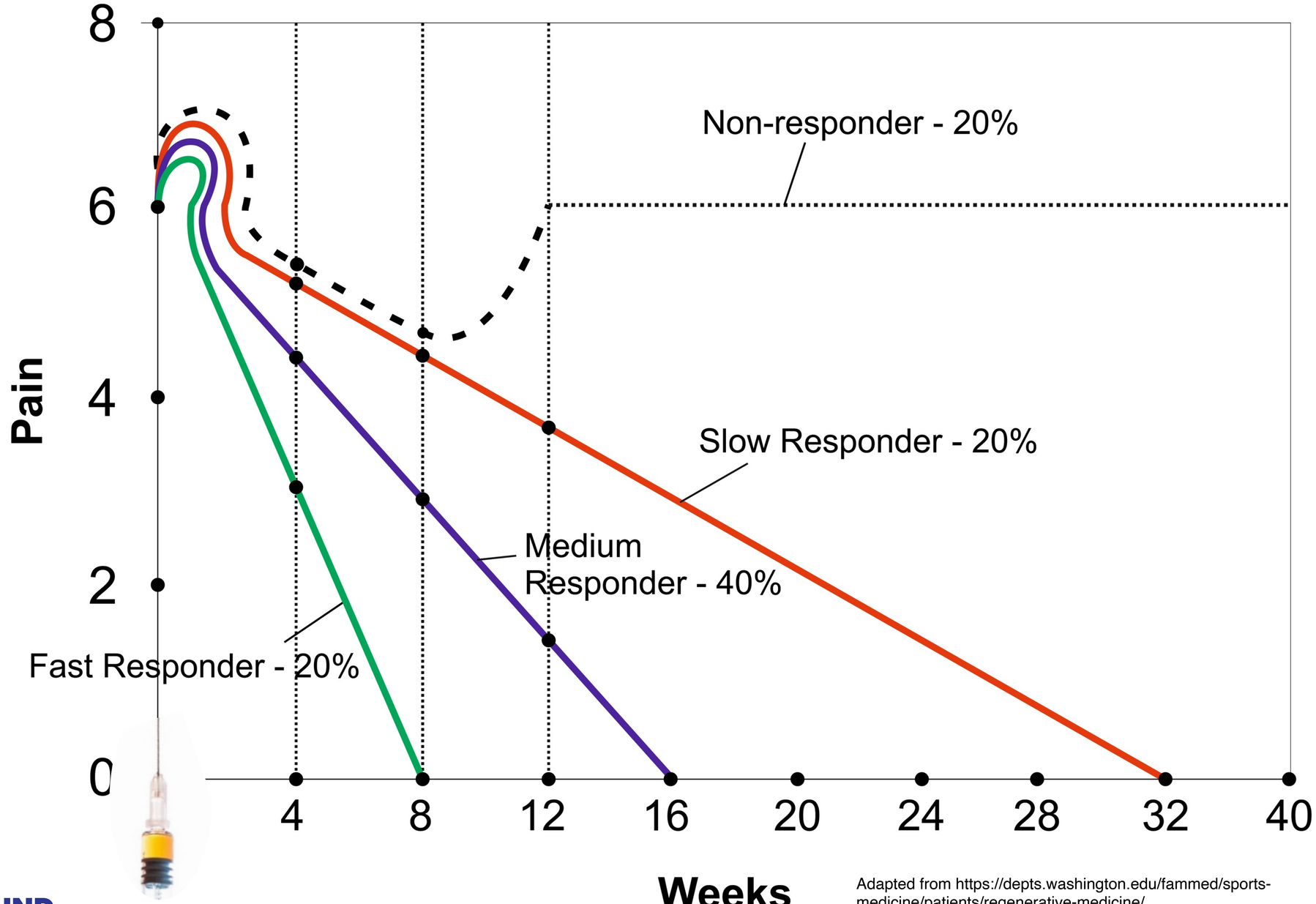
TENDON

TENNIS ELBOW
ROTATOR CUFF
ACHILLES TENDON

FASCIA

PLANTAR FASCIITIS

PAIN REDUCTION AFTER PRP TREATMENT FOR TENDONITIS



Adapted from https://depts.washington.edu/fammed/sports-medicine/patients/regenerative-medicine/

Tennis Elbow

2015 Study in Bonn, DE & Langfang, CN

27 Studies including more than 1000 patients.

Cortisone is not recommended.

Injection therapies for lateral epicondylalgia: a systematic review and Bayesian network meta-analysis

PDF

Wei Dong[1], Hans Goost[2], Xiang-Bo Lin[3], Christof Burger[4], Christian Paul[5], Zeng-Li Wang[1], Fan-Lin Kong[1], Kristian Welle[4], Zhi-Chao Jiang[6], Koroush Kabir[4]

Author affiliations

BMJ Learning | Take the Test

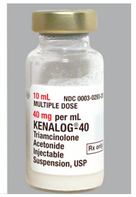
Abstract

Background There are many injection therapies for lateral epicondylalgia but there has been no previous comprehensive comparison, based on the Bayesian method.

Methods The MEDLINE, EMBASE and the Cochrane Central Register of Controlled Trials (CENTRAL) databases were searched for appropriate literature. The outcome measurement was the pain score. Direct comparisons were performed using the pairwise meta-analysis, and network meta-analysis, based on a Bayesian model, was used to calculate the results of all of the potentially possible comparisons and rank probabilities. A sensitivity analysis was performed by excluding low-quality studies. The inconsistency of the model was assessed by means of the node-splitting method. Metaregression was used to assess the relationship between the sample size and the treatment effect.

Results All of the injection treatments showed a trend towards better effects than placebo. Additionally, the peppering technique did not add additional benefits when combined with other treatments. No significant changes were observed by excluding low-quality studies in the sensitivity analysis. No significant inconsistencies were found according to the inconsistency analysis, and metaregression revealed that the sample size was not associated with the treatment effects.

Conclusions Some commonly used injection therapies can be considered treatment candidates for lateral epicondylalgia, such as botulinum toxin, platelet-rich plasma and autologous blood injection, but corticosteroid is not recommended. Hyaluronate injection and prolotherapy might be more effective, but their superiority must be confirmed by more research. The peppering technique is not helpful in injection therapies.



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Tennis Elbow

2015 Study in Mumbai, India

65 patients over 90 days?

PRP is better at 90 days

Comparison of Local Injection of Platelet Rich Plasma and Corticosteroids in the Treatment of Lateral Epicondylitis of Humerus

Raman Yadav,[1] S Y Kothari,[2] and Diganta Borah[3]

Abstract Go to:

Introduction

Lateral epicondylitis or Tennis Elbow is one of the most common causes of upper extremity pain with various treatment options. Platelet-rich plasma (PRP) offers a new option for the treatment of lateral epicondylitis. This study was conducted with an aim to compare the efficacy of PRP versus methyl-prednisolone local injection in patients with lateral epicondylitis.

Materials and Methods

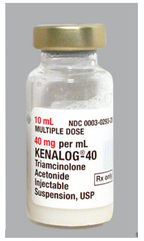
Sixty five patients with lateral epicondylitis were included in the study and randomized into two groups. Group A was treated with single injection of 1ml PRP with absolute platelet count of at least 1 million platelets/ mm^3. Group B was treated with single injection of 1ml (40mg) methyl-prednisolone. Pain, grip strength and functional improvements were assessed using visual analogue scale, dynamometer and quick Disabilities of the Arm, Shoulder and Hand scale respectively at baseline, 15 days, 1 month and 3 months.

Results

Sixty patients completed the follow up. All assessment parameters improved significantly in both the Groups at each follow up compared to baseline. At the end of three months group A showed significantly better improvement as compared to Group B.

Conclusion

PRP and methyl-prenisolone both are effective in the treatment of lateral epicondylitis. However, PRP is a superior treatment option for longer duration efficacy.



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15 days 90 days

✓ ✓

15 days 90 days

Tennis Elbow

2014 Study in Stanford, CA

230 Patients over 24 weeks?

Needling a tendon alone is helpful, but PRP is better at 24 weeks.

Am J Sports Med. 2014 Feb;42(2):463-71. doi: 10.1177/0363546513494359. Epub 2013 Jul 3.

Efficacy of platelet-rich plasma for chronic tennis elbow: a double-blind, prospective, multicenter, randomized controlled trial of 230 patients.

Mishra AK[1], Skrepnik NV, Edwards SG, Jones GL, Sampson S, Vermillion DA, Ramsey ML, Karli DC, Rettig AC.

Author information

Abstract

BACKGROUND: Elbow tenderness and pain with resisted wrist extension are common manifestations of lateral epicondylar tendinopathy, also known as tennis elbow. Previous studies have suggested platelet-rich plasma (PRP) to be a safe and effective therapy for tennis elbow.

PURPOSE: To evaluate the clinical value of tendon needling with PRP in patients with chronic tennis elbow compared with an active control group.

STUDY DESIGN: Randomized controlled trial; Level of evidence, 2.

METHODS: A total of 230 patients with chronic lateral epicondylar tendinopathy were treated at 12 centers over 5 years. All patients had at least 3 months of symptoms and had failed conventional therapy. There were no differences in patients randomized to receive PRP (n = 116) or active controls (n = 114). The PRP was prepared from venous whole blood at the point of care and contained both concentrated platelets and leukocytes. After receiving a local anesthetic, all patients had their extensor tendons needled with or without PRP. Patients and investigators remained blinded to the treatment group throughout the study. A successful outcome was defined as 25% or greater improvement on the visual analog scale for pain.

RESULTS: Patient outcomes were followed for up to 24 weeks. At 12 weeks (n = 192), the PRP-treated patients reported an improvement of 55.1% in their pain scores compared with 47.4% in the active control group (P = .163). At 24 weeks (n = 119), the PRP-treated patients reported an improvement of 71.5% in their pain scores compared with 56.1% in the control group (P = .019). The percentage of patients reporting significant elbow tenderness at 12 weeks was 37.4% in the PRP group versus 48.4% in the control group (P = .143). Success rates for patients at 12 weeks were 75.2% in the PRP group versus 65.9% in the control group (P = .104). At 24 weeks, 29.1% of the PRP-treated patients reported significant elbow tenderness versus 54.0% in the control group (P = .009). Success rates for patients with 24 weeks of follow-up were 83.9% in the PRP group compared with 68.3% in the control group (P = .037). No significant complications occurred in either group.

CONCLUSION: No significant differences were found at 12 weeks in this study. At 24 weeks, however, clinically meaningful improvements were found in patients treated with leukocyte-enriched PRP compared with an active control group.

✓ ✗

12 wks 24 wks

✓ ✓

12 wks 24 wks

Tennis Elbow

2013 Study in Dublin, Ireland

204 Patients over 12 months

PRP vs Cortisone Injection

PRP group was 12 times LESS LIKELY to need surgery

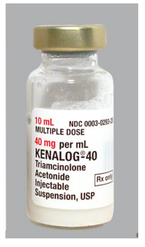
Aprospective cohort study indicates that platelet-rich plasma (PRP) injection may be a safe and cost-effective treatment alternative for rotator cuff tendinopathy (RCT) without a full-thickness tear of the rotator cuff. The results are presented in Scientific Poster P318, "Platelet Rich Plasma Injection as an Alternative Treatment for Rotator Cuff Tendinitis of Shoulder," selected as the 2013 Best Poster in the Shoulder and Elbow category, on display in Academy Hall B.

In recent years, PRP has emerged as an effective treatment option for various tendinopathies throughout the body, including the rotator cuff tendon. Turlough O'Donnell, MD, and his colleague Aamir H. Shaikh, MSc, MRCSEd, MCh, of UPMC Beacon Hospital in Dublin, Ireland, sought to evaluate the therapeutic effects of multiple PRP injections administered directly into the supraspinatus tendon, compared with use of corticosteroid injections, in the treatment of RCT.

They prospectively identified 204 patients with poor shoulder function based on Constant-Murley (CMS) shoulder scores and shoulder pain that restricted range of motion (ROM). Only patients with full passive ROM and MRI–confirmed Goutallier grade 2 or less fatty infiltration were included.

Patients were divided into two age- and sex-matched cohorts. The PRP group (n = 102) was treated with PRP injections administered directly into the suprasimatos tendon; the control group (n =102) was treated with 20 mL solution of 0.05 percent bupivacaine and 80 mgs of methylprednisolone into the subacromial space.

Visual analog scale (VAS) pain scores, ROM, and Constant shoulder scores were obtained in all patients 3 months after final injection.



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PRP found safe, effective

At 3 months post-injection, the researchers found clinically and statistically significant improvement in VAS pain scores, ROM, and mean Constant scores in both cohorts compared with pre-injection scores ($P < 0.001$). Although patients in the control group initially had a higher mean CMS score (49.68 vs 48.86), and patients in both groups showed significant improvement after receiving the injections (60.99 vs 80.43), the degree of change in the PRP group was significantly better than in the control group ($P = 0.05$).

Patients in the PRP group also had significantly better active forward flexion, abduction, and internal rotation at final follow-up than did those in the control group. The mean difference in Constant scores post-injection in the two groups was 19.4. According to the researchers, when this change of estimated means was plotted against pre-injection scores using analysis of variance, the increase in scores was clearly greater in the PRP group than in the steroid group (67.7 percent and 24.9 percent, respectively). In addition, at 1-year follow-up, only 3 patients in the PRP group had undergone surgery for recalcitrant pain, whereas 48 patients in the corticosteroid group had required surgical intervention.

"At 12-month follow-up, patients who received a series of PRP injections were 16 times less likely to have undergone surgical intervention than patients who received corticosteroid injections," the authors said. The authors concluded that PRP injections are a clinically safe and cost-effective treatment alternative to corticosteroid injections for RCT pain.

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Tennis Elbow

2011 Study in The Hague, NL

100 Patients over 2 years?

PRP is better than steroid.

Am J Sports Med. 2011 Jun;39(6):1200-8. doi: 10.1177/0363546510397173. Epub 2011 Mar 21.

Ongoing positive effect of platelet-rich plasma versus corticosteroid injection in lateral epicondylitis: a double-blind randomized controlled trial with 2-year follow-up.

Gosens T[1], Peerbooms JC, van Laar W, den Oudsten BL.

Author information

Abstract

BACKGROUND: Platelet-rich plasma (PRP) has been shown to be a general stimulation for repair and 1-year results showed promising success percentages.

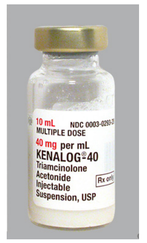
PURPOSE: This trial was undertaken to determine the effectiveness of PRP compared with corticosteroid injections in patients with chronic lateral epicondylitis with a 2-year follow-up.

STUDY DESIGN: Randomized controlled trial; Level of evidence, 1.

METHODS: The trial was conducted in 2 Dutch teaching hospitals. One hundred patients with chronic lateral epicondylitis were randomly assigned to a leukocyte-enriched PRP group (n = 51) or the corticosteroid group (n = 49). Randomization and allocation to the trial group were carried out by a central computer system. Patients received either a corticosteroid injection or an autologous platelet concentrate injection through a peppering needling technique. The primary analysis included visual analog scale (VAS) pain scores and Disabilities of the Arm, Shoulder and Hand (DASH) outcome scores.

RESULTS: The PRP group was more often successfully treated than the corticosteroid group (P < .0001). Success was defined as a reduction of 25% on VAS or DASH scores without a reintervention after 2 years. When baseline VAS and DASH scores were compared with the scores at 2-year follow-up, both groups significantly improved across time (intention-to-treat principle). However, the DASH scores of the corticosteroid group returned to baseline levels, while those of the PRP group significantly improved (as-treated principle). There were no complications related to the use of PRP.

CONCLUSION: Treatment of patients with chronic lateral epicondylitis with PRP reduces pain and increases function significantly, exceeding the effect of corticosteroid injection even after a follow-up of 2 years. Future decisions for application of PRP for lateral epicondylitis should be confirmed by further follow-up from this trial and should take into account possible costs and harms as well as benefits.



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2 years

✔

2 years

Rotator Cuff

2013 Study in Ankara, Turkey

40 patients over 1 year.

All got exercise program and were injected ABOVE the tendon.

PRP = Saline at 1 year.

Am J Sports Med. 2013 Nov;41(11):2609-16. doi: 10.1177/0363546513496542. Epub 2013 Jul 26.

Platelet-rich plasma injections in the treatment of chronic rotator cuff tendinopathy: a randomized controlled trial with 1-year follow-up.

Kesikburun S[1], Tan AK, Yilmaz B, Yaşar E, Yazicioğlu K.

Author information

Abstract

BACKGROUND: Rotator cuff tendinopathy (RCT) is a significant source of disability and loss of work. Platelet-rich plasma (PRP) has been suggested to be beneficial in the treatment of RCT.

PURPOSE: To investigate the effect of PRP injections on pain and shoulder functions in patients with chronic RCT.

STUDY DESIGN: Randomized controlled trial; Level of evidence, 1.

METHODS: A total of 40 patients, 18 to 70 years of age, with (1) a history of shoulder pain for >3 months during overhead-throwing activities, (2) MRI findings of RCT or partial tendon ruptures, and (3) a minimum 50% reduction in shoulder pain with subacromial injections of an anesthetic were included in this placebo-controlled, double-blind randomized clinical trial. Patients were randomized into a PRP group (n = 20) or placebo group (n = 20). Patients received an ultrasound-guided injection into the subacromial space that contained either 5 mL of PRP prepared from autologous venous blood or 5 mL of saline solution. All patients underwent a 6-week standard exercise program. Outcome measures (Western Ontario Rotator Cuff Index [WORC], Shoulder Pain and Disability Index [SPADI], 100-mm visual analog scale [VAS] of shoulder pain with the Neer test, and shoulder range of motion) were assessed at baseline and at 3, 6, 12, and 24 weeks and 1 year after injection.

RESULTS: Comparison of the patients revealed no significant difference between the groups in WORC, SPADI, and VAS scores at 1-year follow-up (P = .174, P = .314, and P = .904, respectively). Similar results were found at other assessment points. Within each group, the WORC, SPADI, and VAS scores showed significant improvements compared with baseline at all time points (P < .001). In the range of motion measures, there were no significant group × time interactions.

CONCLUSION: At 1-year follow-up, a PRP injection was found to be no more effective in improving quality of life, pain, disability, and shoulder range of motion than placebo in patients with chronic RCT who were treated with an exercise program.

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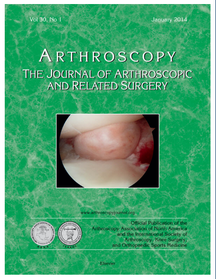
Rotator Cuff

2013 Study in Farmington, CT

Biceps Tendons in a petri dish.

Both Lidocaine and Cortisone suppress tendon cell growth and inhibit the growth promotion of PRP.



Arthroscopy. 2012 May;28(5):711-9. doi: 10.1016/j.arthro.2011.09.013. Epub 2012 Jan 21.

Corticosteroids and local anesthetics decrease positive effects of platelet-rich plasma: an in vitro study on human tendon cells.

Carofino B[1], Chowaniec DM, McCarthy MB, Bradley JP, Delaronde S, Beitzel K, Cote MP, Arciero RA, Mazzocca AD.

Author information

Abstract

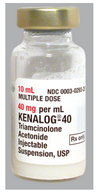
PURPOSE: To determine the effects of mixing anesthetics or corticosteroids with platelet-rich plasma (PRP) on human tenocytes in vitro.

METHODS: Two separate protocols (double spin and single spin) were used to obtain homologous PRP from the blood of 8 healthy volunteers. Discarded tendon acquired during biceps tenodesis served as tendon specimens for all experiments. After cell isolation, tenocytes were treated in culture with PRP alone or in combination with corticosteroids and/or anesthetics. Fetal bovine serum in concentrations of 2% and 10% served as controls. Cell exposure times of 5, 10, and 30 minutes were used. Radioactive thymidine and luminescence assays were obtained to examine cell proliferation and viability.

RESULTS: The presence of lidocaine, bupivacaine, or methylprednisolone resulted in significantly less proliferation than the negative 2% fetal bovine serum control (P < .05). When we compared groups, both lidocaine and bupivacaine had a greater inhibitory effect than methylprednisolone (P < .05). At all time points, viability was significantly decreased in the presence of lidocaine, bupivacaine, or methylprednisolone compared with the negative control (P < .05).

CONCLUSIONS: The addition of either anesthetics or corticosteroids to PRP resulted in statistically significant decreases in tenocyte proliferation and cell viability. These results suggest that incorporation of anesthetics or corticosteroids, either alone or in combination, with PRP injection may compromise the potentially beneficial in vitro effects of isolated PRP on tendon cells and compromise cell viability at the site of tendon injury.

CLINICAL RELEVANCE: Anesthetics or corticosteroids either alone or in combination should be used carefully to preserve the proposed positive effects of PRP in the treatment of tendon injury.



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Rotator Cuff

2013 Study in Philadelphia, PA

19 patients over 1 year

Injected INTO & AROUND the tendon.

Improved pain, function, MRI findings and patient satisfaction.

Effectiveness of Platelet-rich Plasma Injection for Rotator Cuff Tendinopathy: A Prospective Open-label Study

Michael Scarpone, DO, David Rabago, MD,[2] Edward Snell, MD, Patrick DeMeo, MD, Kristine Ruppert, DrPH, Perry Pritchard, PT, ATC, Gennie Arbogast, ATC, John J. Wilson, MD, MS, and John F. Balzano, MD

Methods:

Participants recruited from an outpatient sports medicine clinic had clinically and magnetic resonance image (MRI)—demonstrated RCT refractory to physical therapy and corticosteroid injection. They received one ultrasound-guided injection of 3.0 mL of 1% xylocaine followed by 3.5 mL of PRP at the lesion and surrounding tendon. Primary outcome: 0–10 visual analog scale (VAS; baseline, 8, 12, and 52 weeks). Secondary outcomes: functional shoulder tests assessing rotator cuff strength and endurance (at baseline and 8 and 12 weeks), MRI severity (1–5 points [at baseline and 4 and 8 weeks]), and patient satisfaction (52 weeks).

Results:

Eighteen participants with 19 assessed shoulders reported VAS pain score improvement from 7.5 ± 0.3 points to 0.5 ± 0.3 points by week 12 and 0.4 ± 0.2 (P = .0001) points at week 52. Functional outcomes significantly improved; the largest effect was seen in the external rotation test: 33.5 ± 5.7 seconds to 62.6 ± 7.2 seconds at week 12 (P = .0001). MRI appearance improved by 1 to 3 points in 16 of 18 assessed shoulders. Seventeen participants were "completely satisfied" (12) or "satisfied" (5). One participant was "unsatisfied."

Conclusions:

A single ultrasound-guided, intralesional injection of PRP resulted in safe, significant, sustained improvement of pain, function, and MRI outcomes in participants with refractory RCT. Randomized multidisciplinary effectiveness trials that add ultrasound and validated clinical outcome measures are needed to further assess PRP for RCT.

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8 wks 12 wks 52 wks

Achilles Tendon

2015 Study in Chieti, Italy

83 patients over 2 - 7 years?

PRP shows benefit without a single rupture.

Foot Ankle Surg. 2015 Sep;21(3):178-81. doi: 10.1016/j.fas.2014.11.005. Epub 2014 Dec 11.

Long-term beneficial effects of platelet-rich plasma for non-insertional Achilles tendinopathy.

Guelfi M[1], Pantalone A[2], Vanni D[2], Abate M[2], Guelfi MG[3], Salini V[2].

Author information

Abstract

BACKGROUND: The aim of this retrospective study is evaluating the long-term clinical outcome in patients affected by mid-portion Chronic Recalcitrant Achilles Tendinopathies (CRAT) treated with administration of single platelet-rich plasma (PRP).

METHODS: A total of 83 tendons (73 patients, 59 males and 14 females; age 43±17.5 years) affected by non-insertional CRAT were treated with single PRP injection. These were evaluated with the Victorian Institute of Sport Assessment - Achilles (VISA-A) questionnaire, Blazina score and satisfaction index at baseline at intervals of 3 weeks, 3 months, 6 months. Final follow-up was carried out at a mean of 50.1 months (range, 24-96).

RESULTS: Baseline VISA-A was 45±15. Results relative to the final follow-up improved significantly to a mean of 88±8 (p<00.1). Blazina was used for patients practicing sports (54 tendons out of 46 different patients): 37 tendons were grade IIIa, 11 II, and 6 IIIbis. Final follow-up Blazina scores improved for 45 grade 0, 5 I, 4 II (p<00.5). Seventy-six tendons (91.6%) were rated as satisfactory and patients would repeat the treatment. Seven tendons (8.4%) were classified as unsatisfactory at the 6 months follow-up and underwent a second PRP injection. In addition to this, patients reported no Achilles tendon rupture.

CONCLUSIONS: The study shows beneficial effects and low complication rate following of single PRP injections on a large cohort of patients with mid-long-term follow-up. No cases reported Achilles tendon rupture, in contrast to literature, which described CRAT as one of the most common risk factors. The use of a single PRP injection can therefore be a safe and attractive alternative in the treatment of non-insertional CRATs.

✔ 3 mos ✔ 6 mos ✔ 2.5 yrs ✔ 4-7 yrs

Achilles Tendon

2012 Study in Nantucket, MA

30 patients over 2 years?

PRP resolved abnormalities by 6 mos & improved symptoms over 2 years

Foot Ankle Int. 2012 May;33(5):379-85. doi: 10.3113/FAI.2012.0379.

Platelet rich plasma treatment for chronic Achilles tendinosis.

Monto RR[1].

Author information

Abstract

BACKGROUND: Chronic Achilles tendinosis is a relatively common but difficult orthopedic condition to treat. In this study, autologous platelet rich plasma (PRP), a concentrated bioactive blood component rich in cytokines and growth factors, was evaluated to determine its potential long-term efficacy in treating chronic cases of Achilles tendinosis resistant to traditional nonoperative management.

METHODS: Thirty patients with chronic Achilles tendinosis who did not respond to a minimum of 6 months of traditional nonoperative treatment modalities were treated with a single ultrasound guided injection of PRP. AOFAS scoring was completed for all patients pretreatment and at 0, 1, 2, 3, 6, 12, and 24 months post-treatment. MRI and/or ultrasound studies were completed for all patients pre-treatment and at 6 months post-treatment. Prior to the PRP treatment all of the patients in this study were considering surgical Achilles repair for their severe symptoms.

RESULTS: The average AOFAS score increased from 34 (range, 20 to 60) to 92 (range, 87 to 100) by 3 months after PRP treatment and remained elevated at 88 (range, 76 to 100) at 24 months post-treatment. Pretreatment imaging abnormalities present in the Achilles tendon on MRI and ultrasound studies resolved in 27 of 29 patients at 6 months post-treatment. Clinical success was achieved in 28 of 30 patients.

CONCLUSION: Platelet-rich plasma was used effectively to treat chronic recalcitrant cases of Achilles tendinosis.

✔ 1 mo ✔ 2 mos ✔ 3 mos ✔ 6 mos ✔ 12 mos ✔ 24 mos

Achilles Tendon

2011 Study in Rotterdam, NL

54 Patients over 1 year?

Exercise + saline or PRP are both helpful for pain reduction.

Br J Sports Med 2011;**45**:e1 doi:10.1136/bjsm.2010.081554.40

Electronic pages

Platelet-rich plasma for chronic achilles tendinopathy: a double-blind randomised controlled trial with one year follow-up

S de Jonge[1,2], R J de Vos[2], A Weir[2], H T M van Schie[1], S M A Bierma-Zeinstra[1], J A N Verhaar[1], H Weinans[1], J L Tol[2]

Author Affiliations

Abstract

Introduction Chronic Achilles tendinopathy occurs frequently and is very hard to treat. The disease involves local degeneration of tendon tissue, of which regeneration may be improved by injecting platelet-rich plasma (PRP), an increasingly used therapy for releasing growth factors into degenerative tendon. However, high-quality randomised clinical trials on this topic are lacking. The aim of this study was to evaluate the effect of a PRP injection in patients with chronic Achilles tendinopathy.

Methods In this stratified, block randomised, double-blind, placebo-controlled trial at single center 54 patients aged 18–70 years were randomised in two treatment groups. Next to an eccentric training program the patients received a blinded injection containing either PRP group or saline (placebo group). Primary outcome, the objective and validated Victorian Institute of Sports Assessment-Achilles (VISA-A) score, was assessed and ultrasound examination was performed at baseline and all follow-up appointments.

Results After randomisation into the PRP group (n=27) and the placebo group (n=27) there was a complete follow-up. After one year, the mean VISA-A score improved in both the PRP-group and the placebo group. There was no significant difference in increase between both groups (adjusted between-group difference, 5.5; 95% CI, −4.9 to 15.8, p=0.292). Ultrasonographic tendon structure improved significantly in both groups, but not significant different between both groups (adjusted between-group difference, 1.2 %, 95% CI, −4.1 to 6.6, p=0.647)

Conclusion One-year follow-up analysis of the world's first randomised controlled trial showed no evidence for the use of platelet-rich plasma injection in chronic Achilles tendinopathy. These findings are in line with our 6 months results (De Vos *et al* JAMA 2010).

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SPORTS MEDICINE ULTRASOUND

REGENERATIVE SPORT MEDICINE

A SUMMARY OF EVIDENCE FOR:

JOINT

KNEE ARTHRITIS

TENDON

TENNIS ELBOW
ROTATOR CUFF
ACHILLES TENDON

FASCIA

PLANTAR FASCIITIS

SPORTS MEDICINE ULTRASOUND PRP

Plantar Fasciitis

2014 Study in Seoul, South Korea

21 patients over 6 months?

Dextrose equal to PRP.

Autologous Platelet-Rich Plasma Versus Dextrose Prolotherapy for the Treatment of Chronic Recalcitrant Plantar Fasciitis

Eunkuk Kim, MD, PhD, Jong Ha Lee, MD, PhD

Objective
To determine the efficacy of autologous platelet-rich plasma (PRP) compared with dextrose prolotherapy (DP) in patients with chronic recalcitrant plantar fasciitis (PF)

Design
A single-blinded, randomized, controlled study.

Participants
Twenty-one patients with a clinical diagnosis of chronic PF confirmed by diagnostic ultrasound (plantar fascia thickness >4 mm) were randomly assigned to the PRP group (n = 10) or the DP group (n = 11).

Interventions
Each patient received 2 injections into the plantar fascia through a peppering technique under ultrasound guidance at an interval of 2 weeks, either with 2 mL of autologous PRP or 2 mL of 15% dextrose/lidocaine solution.

Main Outcome Measurements
The outcome measures included the pain, disability, and activity limitation subscales, measured by means of the Foot Functional Index. Data were collected before the first injection, at 2 weeks (before the second injection), and at the 2- and 6-month follow-ups.

Results
All patients completed the follow-ups, with the exception of 1 patient in the PRP group. The mean Foot Functional Index total and subcategory score improvements were greater in the PRP group compared with the DP group (improvement with PRP vs DP, total: 30.4% vs 15.1%, pain: 29.7% vs 17.1%, disability: 26.6% vs 14.5%, activity limitation: 28.0% vs 12.4%). However, no statistically significant difference was noted at any follow-up. In the pain and disability subcategories, both groups showed significant improvements at the last re-evaluation. The PRP group also showed significant improvements in the disability and activity limitation subscales at the second re-evaluation.

Conclusions
Each treatment seems to be effective for chronic recalcitrant PF, expanding the treatment options for patients in whom conservative care has failed. PRP treatment also may lead to a better initial improvement in function compared with DP treatment.

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Plantar Fasciitis

2014 Study in Mumbai, India

60 patients over 3 months?

PRP superior to Cortisone.

Foot Ankle Surg. 2014 Mar;20(1):10-3. doi: 10.1016/j.fas.2013.08.002. Epub 2013 Aug 16.

A study to compare the efficacy of corticosteroid therapy with platelet-rich plasma therapy in recalcitrant plantar fasciitis: a preliminary report.

Shetty VD[1], Dhillon M[2], Hegde C[3], Jagtap P[3], Shetty S[4].

1. Introduction

Plantar fasciitis (PF), both acute and chronic, is one of the commonest foot ailments [1]. More than two million individuals are treated for chronic PF on an annual basis, in the United Sates alone, accounting for 11 to 15% of visits related to foot ailments [2].

PF is considered a self-limiting condition. However, it may require a resolution time ranging from 6 to18 months and sometimes even longer which can lead to frustration on both, the physician and the patient [3,4]. There are many treatment modalities available for PF, both medical and surgical, with variable success rates.

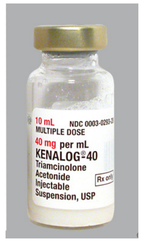
Abstract

BACKGROUND: Plantar fasciitis is one of the commonest, and most frustrating, foot ailments seen in a regular orthopaedic clinic. There are a number of modalities available to treat this condition, of which corticosteroid injection is, perhaps, the most popular. However, recent years have seen an increased interest in the use of platelet-rich plasma (PRP) injections in various clinical situations such as plantar fasciitis.

METHODS: We undertook a prospective non-randomized study to compare the efficacy of traditional corticosteroid injection (Steroid group) to PRP injection (PRP group), in a cohort of patients.

RESULTS: We studied both groups of patients before and after the injections using Visual Analogue Score (VAS), the Foot & Ankle Disability Index (FADI) and American Foot and Ankle Score (AFAS). Our study confirms that there is significant clinical improvement in PRP group at three months after the injection.

CONCLUSION: The use of PRP injection can be an attractive alternative in the treatment of disabling, recalcitrant plantar fasciitis.



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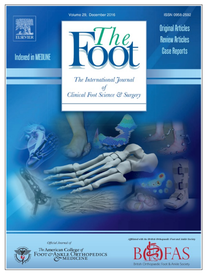
Plantar Fasciitis

2015 Study in Wigan, UK

60 patients over 12 months?

PRP is better at 12 months.

PRP Effect does not wear off with time.



Platelet rich plasma versus corticosteroid injection for plantar fasciitis: A comparative study

Kowshik Jain, Philip N. Murphy, Timothy M. Clough

Highlights

- PRP is as effective as Steroid injection at achieving symptom relief at 3 and 6 months.
- PRP effect does not wear off with time.
- At 12 months, PRP is significantly more effective than Steroid.
- PRP is better and more durable than cortisone injection to treat plantar fasciitis.

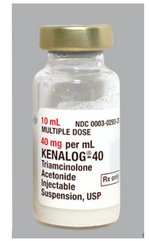
Abstract

Introduction
Intractable plantar fasciitis can be a difficult condition to treat. Early results of platelet rich plasma (PRP) injection have been promising. We compared PRP to traditional cortisone injection in the treatment of chronic cases of plantar fasciitis resistant to traditional nonoperative management. The aim of the study was to compare the efficacy of PRP to that of Steroid at 3, 6 and 12 months after injection.

Methods
60 heels with intractable plantar fasciitis who had failed conservative treatment were randomised to receive either PRP or Steroid injection. All patients were assessed with the Roles–Maudsley (RM) Score, Visual Analogue Score (VAS) for pain and the American Orthopaedic Foot and Ankle Society (AOFAS) score. Data was collected prospectively on the cohort, pre-treatment, at 3, 6 and 12 months post injection and the results were compared.

Results
Pre-injection, the two groups were well matched with no statistically significant difference. At 3 months, all three outcome scores had significantly improved from their pretreatment level in both groups. The scores in the Steroid arm were marginally better than in the PRP arm, but this difference was not statistically significant. At 6 months, there was no statistically significant difference between the two groups, though there was a trend for the PRP scores to become better than the Steroid scores. At 12 months, the RM, VAS and AOFAS scores in the PRP arm (1.9, 3.3 and 88.5) were significantly better than the Steroid arm (2.6, 5.3 and 75) with *P* values of .013, .028 and .033, respectively.

Conclusions
PRP is as effective as Steroid injection at achieving symptom relief at 3 and 6 months after injection, for the treatment of plantar fasciitis, but unlike Steroid, its effect does not wear off with time. At 12 months, PRP is significantly more effective than Steroid, making it better and more durable than cortisone injection.



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3 mos 6 mos 12 mos

✔ ✔ ✔

3 mos 6 mos 12 mos

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