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Use of mesh in abdominal wall and inguinal hernias

Why use mesh ?

Up until 1958, abdominal wall and groin hernias were closed with primary suture repair. In 1958, Usher published his technique using a polypropylene mesh, eventually leading to the Lichtenstein repair with mesh about 30 years later, which set the benchmark for inguinal hernia repairs with mesh. Currently, about 1 million meshes are used per year world-wide.

In 2002, the European Union trialist collaboration analysed 58 randomised controlled trials and found that the use of mesh was superior to other non-mesh techniques. In particular, they report significantly fewer recurrences and less post-operative pain with mesh repair [1]. This is why the use of mesh has virtually replaced suture repair in the developed world.

When possible, I prefer to repair inguinal hernias via a laparoscopic or minimally invasive approach. This approach is superior to the traditional open repair as it results in significantly less pain after surgery, much quicker recovery and return to work, no numbness from nerve damage, significantly lower risk of chronic pain from nerve entrapment, and the ability to repair both sides and femoral hernias (if present) simultaneously. A laparoscopic approach is not possible without the use of mesh.

What is the ideal mesh ?

Desirable properties of mesh include :
- Lightweight (thinner filaments, larger pores) which allow better soft-tissue ingrowth resulting in less inflammatory response, less shrinkage and better integration compared to heavyweight meshes
- Strong biomechanical properties to withstand the stresses placed on the abdominal wall
- Yet flexible enough after tissue integration
- Not be susceptible to infection

In my opinion, the 2 type of meshes that best match these properties are lightweight polypropylene and polyester meshes. I routinely use polyester meshes due to the ease of handling, its hydrophilic properties and the confidence I have in successfully implanting the same mesh in about 2000 cases (between 2008 and 2018).

I can reassure you that I gain no financial or any other type of benefit or incentive from the meshes that I use in surgery.

What about dissolvable or biological meshes ?

The simple answer is that by their nature, they dissolve away and the loss of tensile strength in the repair will inevitably result in the hernia coming back and the need for more surgery. These type of meshes may have a role in complicated cases such as infected or contaminated abdominal wall defects and proximity to organs such as the oesophagus and stomach in hiatus hernia repairs or placement within the abdominal cavity next to the intestines.

Reference :
1. The EU Hernia Trialists Collaboration. Repair of groin hernia with synthetic mesh: meta-analysis of RCT. Ann Surg. 2002;235:322–32.