Hello, in this tutorial I’m going to talk to you briefly on sutures and needles. We’ll start by looking at the different needles available, then we’ll talk about sizing of suture, and finally look at the different suture materials available, and how some of these are used in Obstetrics and Gynaecology.
Needles are designed to carry suture material through tissue with the minimal trauma. Surgical needles have 3 basic components – the attachment point, the body and the point.

The majority of sutures we use have an appropriate needle attached, called swaged, as shown on the left. These have the advantages of being convenient, and also minimising tissue trauma. They are subdivided into standard needle attachment and removable needle attachments – which as the name suggests, can be released by a quick tug.

Some needles are eyed allowing the surgeon to choose the needle and suture material to suit the job. You can see this type of needle on the right. However they are rarely used.
The body is the section of the needle grasped by the needle holder. The diameter should be as close as possible to that of the suture material being used. The curvature varies depending on the job, and is expressed as eighths of a circle. In general the deeper the plane the more curved the needle should be. Straight is useful for skin, there is also ½ curve (half circle), 3/8. The final needle shown is a J needle, which is used to close the rectus sheath after laparoscopy.
The point extends from the extreme point of the needle to the maximum diameter of the body. The different points are designed to give the required amount of cutting for different tissues. The needles you are likely to come across in Gynaecology surgery include:

**Blunt point** – for blunt dissection and suturing friable tissue. Also used in patients with blood born viruses such as Hepatitis B. This is shown in the top left, and the symbol used to represent this needle is a small circle inside a larger one.

**Tapered point** – for soft, easily penetrated tissue, shown by a circle with a dot inside.

**Tapercutting** - used to cut through most tissues with minimum trauma, this is shown on the bottom left.

**And cutting** – used to cut through tougher tissues, this is demonstrated by a triangle as shown on the bottom right.
Suture size. Suture sizing is a little confusing for historical reasons. The system originally sized sutures from 1-6, with 1 being the thinnest, and did not allow for thinner sutures being developed. As thinner sutures were created they were named 0, then 2-0, 3-0 etc.

Modern sutures range from 5 to 11-0, which is used in ophthalmic surgery. We commonly use larger 1 sutures to close the uterus at caesarean section, and thinner 2-0 in perineal repair. You can see the difference in the size of these sutures above, but better still find some in theatre so you can feel the difference.
This table demonstrates the width of the suture in mm. As you can see the thinnest, 11-0 is 0.01 mm thick, whilst 2-0 which we commonly use, is 0.3 mm, and 1 is 0.4 mm thick.
The time taken to heal and regain tensile strength varies between different tissues, with muscle and skin taking a few days, fascia and tendons weeks, and some things such as vascular prosthetics needing long term stability. This is the principle that guides choice of suture for any given procedure – it must retain its tensile strength until the point the tissue has healed sufficiently to remain opposed unsupported. It may then be beneficial for the suture to be reabsorbed to prevent a long-term foreign body.
This table demonstrates the time different tissues take to heal. You may be surprised to see how quickly the uterus heals. Remember that other factors do affect healing time, such as the patient’s general health, and infection. Also remember the tissue will never regain its original tensile strength after healing – important in obstetrics when considering women in labour who have had previous caesarian sections.
Sutures can be broadly divided into absorbable and non-absorbable. They can then be further subdivided into monofilament and multifilament. Monofilament is made from a single strand; it has the advantages of tying down smoothly, and is less likely to harbour microorganisms. Multifilament suture is made from several strands twisted or braided together. These give good handling and tying properties.
The most commonly used non-absorbable sutures used in Obstetrics and Gynaecology are demonstrated above. Prolene is a monofilament suture which is used for skin closure after laparotomy, and silk is a multifilament suture which is used to secure surgical drains.
The most commonly used absorbable sutures are demonstrated above. PDS is used when repairing the anal sphincter after a 3rd degree tear – as it is monofilament it helps prevent infection. Vicryl is multifilament and easy to handle and tie. It is used frequently due to these properties. Uses include closing the uterus after caesarean section, tie pedicles at hysterectomy, and used in perineal surgery.

Vicryl rapide has the same properties, but absorbs more quickly and is useful for tissues that heal quickly, where you don’t want a long term foreign body. It is therefore used in 1st and 2nd degree perineal repairs, Bartholin marsupilisation, and other vaginal surgery.
Suture packs provide a lot of information. As well as the name of the suture material (1) and size (2), they also show you the length of thread (3). They give you information about the needle, including the length and curvature, and the point (5).
We hope you have found this useful, and you now have a greater understanding of needles and suture, and their use in obstetric and gynaecological surgery.