



BAPS | British Association of
Paediatric Surgeons

Manual on Preparation of Tissue for Neonatal Skills Course

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1. Basic Equipment
2. Bowel Anastomosis
3. Duodenal Atresia
4. Gastrostomy
5. Oesophageal Atresia and Trachea-Oesophageal Fistula
6. Pyeloplasty

Basic Equipment

1. Pad
2. Basic surgical instruments
3. Pins
4. Syringe
5. Nasogastric tube
6. Sutures

Pad:

The pad can be constructed from reinforced sponge and covered with a waterproof paper, which is stapled to the back of the pad. The pad can be wiped with sterile sheets after each procedure.

Instruments:

1. Needle holder
2. Toothed forceps
3. Non-toothed forces
4. Stitch scissors
5. Selection of mosquito forceps.

Sutures:

Sutures used depend on availability, however we prefer 3/0 Vicryl and 5/0 PDS.



Bowel Anastomosis

Equipment:

Pad

Pins

Two bowel segments (sheep intestines)

5/0 PDS suture

Syringe

The two bowel segments are aligned facing each other. Then the corner stitches are placed using 5/0 PDS. These represent the mesenteric and anti-mesenteric borders. The stitch is placed from outside in to inside out so that the knot is on the outside (Figure 1).

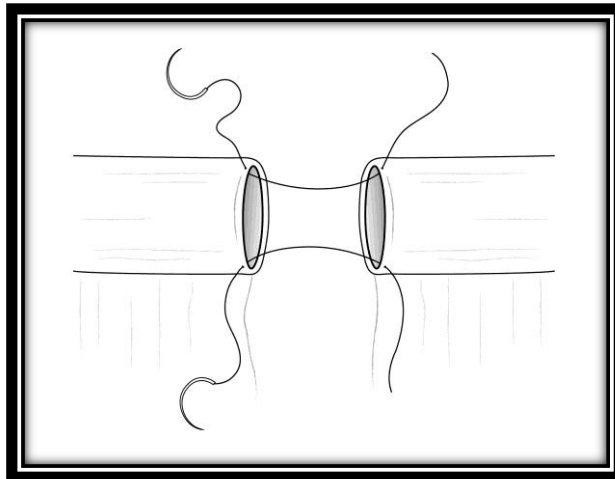


Figure 1

The anterior wall is then closed using 5/0 PDS seromuscular stitches in an interrupted manner. Then the corner stitches are reversed by passing the mesenteric stitch through the defect in the mesentery and flipping the antimesenteric stitch in the other direction. This is depicted in Figure 2.

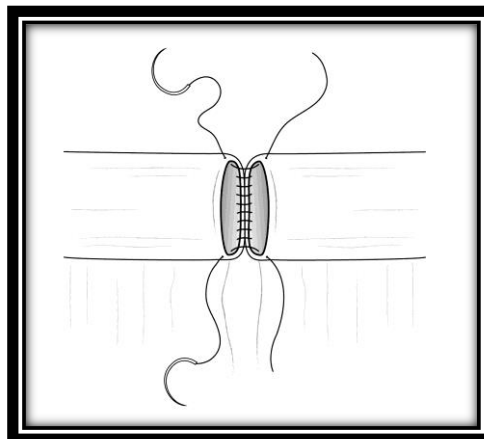


Figure: 2

The anastomosis is completed by closing the posterior wall (which is now anterior) in the same manner (Figure 3).

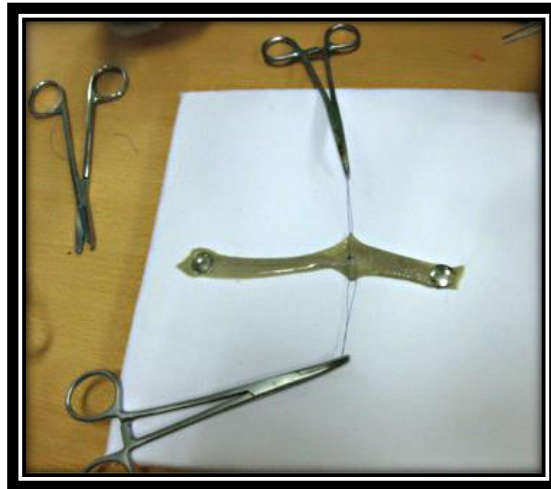


Figure 3

It is our preference to test the anastomosis. This is done by occluding the bowel a distance of about 1cm from the anastomosis and using a 5ml syringe with a blue needle, injecting Saline, and testing for a leak. The trainee below did a good job (Figure 4).

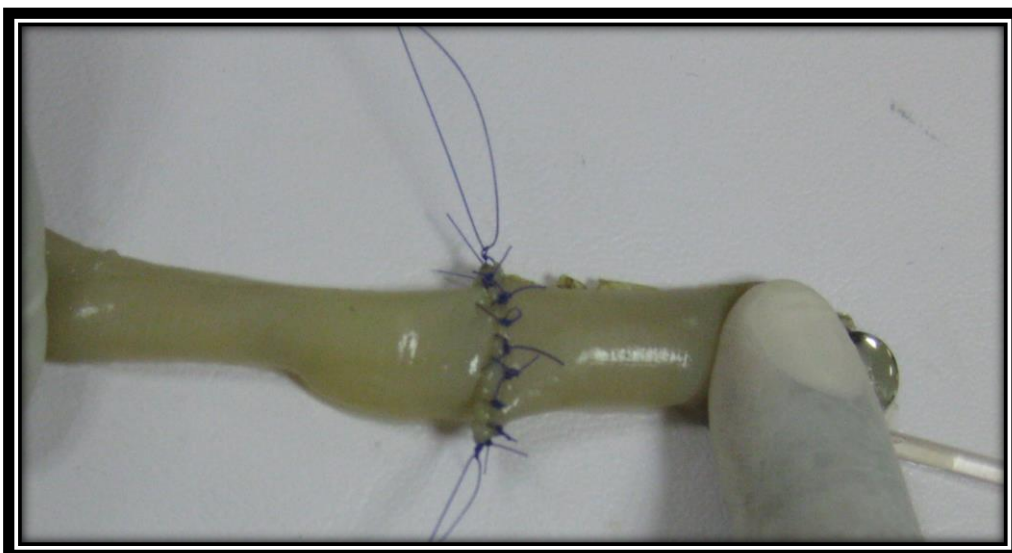


Figure 4

Duodenal Atresia

Equipment:

Pad

Pins

Half a sheep bladder

Segment of bowel

5/0 PDS sutures

3/0 Vicryl stay sutures

Feeding tube

The bladder segment represents the proximal dilated duodenal segment, while the bowel loop represents the distal atretic segment (Figure 5a).



Figure 5a

In the proximal duodenum (bladder) a transverse incision is made.

In the distal duodenum a longitudinal incision is made.

The schematic representation is depicted in Figure 5b.

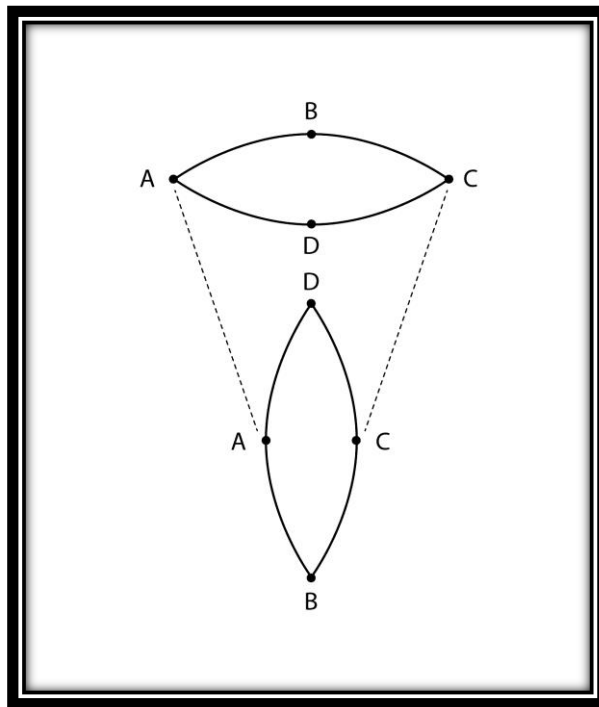


Figure 5b

The 3/0 Vicryl stays are placed at the ends of both segments (Figure 6).



Figure 6

Using 5/0 PDS the corner stitches are placed first. A-A and B-B. The needle enters from outside to inside and on the corresponding end from inside to out.

Then D-D as an internal suture.

The schematic representation is represented in Figure 7

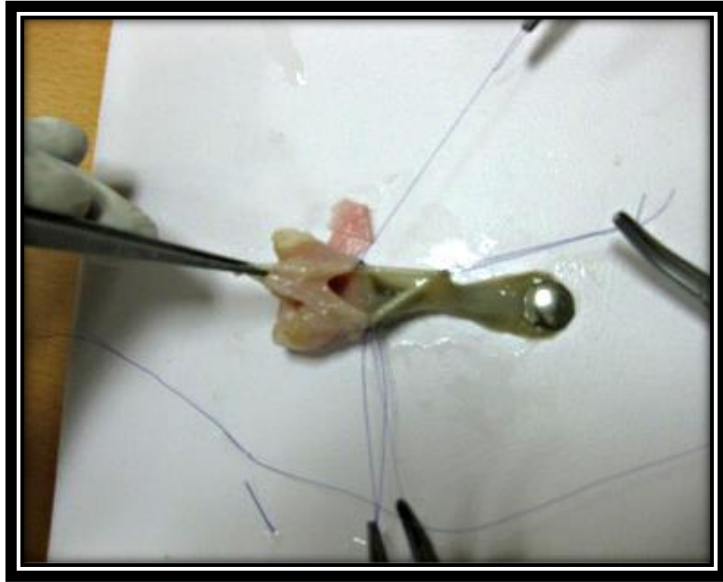


Figure 7

The posterior wall is closed using interrupted 5/0 PDS.

The anterior wall starts by approximating B-B.

The rest of the anterior wall is closed with 5/0 PDS. The final results should look like Figure 8.



Figure 8

Gastrostomy

Equipment:

Pad

Pins

Sheep stomach

Foley catheter

3/0 Vicryl sutures

Technique:

A pen is used to mark the site of the gastrostomy.

Starting at the 12 o'clock position a circumferential 360° suture is placed.

Then another circumferential suture is placed, this time starting at the 6 o'clock. This suture is outside the first suture as depicted in Figure 9.

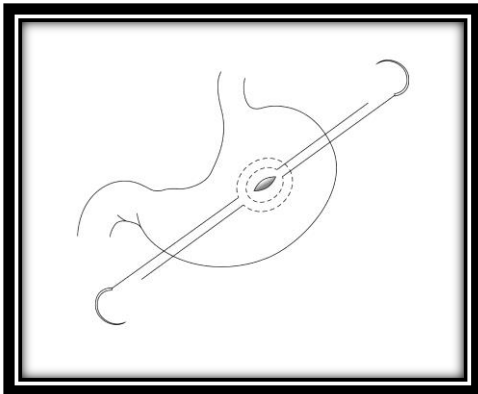


Figure 9

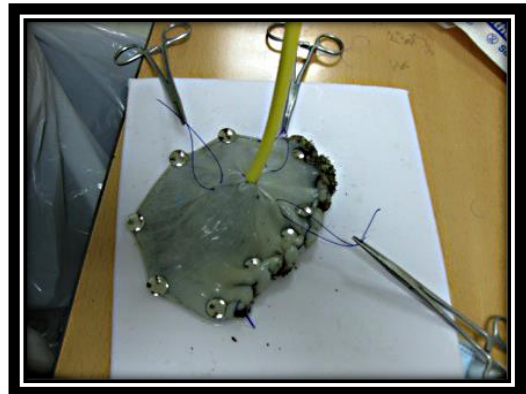


Figure 10

An incision is made in the middle of the sutures and a Foley catheter is placed.

The inner suture is then tied, followed by the outer suture. The balloon is then inflated.

Three further 3/0 Vicryl sutures anchor the stomach to the anterior abdominal wall (Figure 10). In the figure you will notice these anchoring stitches are held by mosquito forceps

Oesophageal atresia with distal tracheo-oesophageal fistula

Equipment:

Pad

Pins

Half a bladder (upper pouch)

Bowel segment (lower pouch)

3/0 Vicryl

5/0 PDS

Naso-gastric tube

A 2 litre transparent bottle of soft drink, cut in half longitudinally, with creation of a window (don't make it too large).

The cut end of a Foley catheter to represent trachea (Figure 11)

3/0 Prolene



Figure 11

The fistula is transfixed with 3/0 Prolene and divided as depicted in Figure 12.

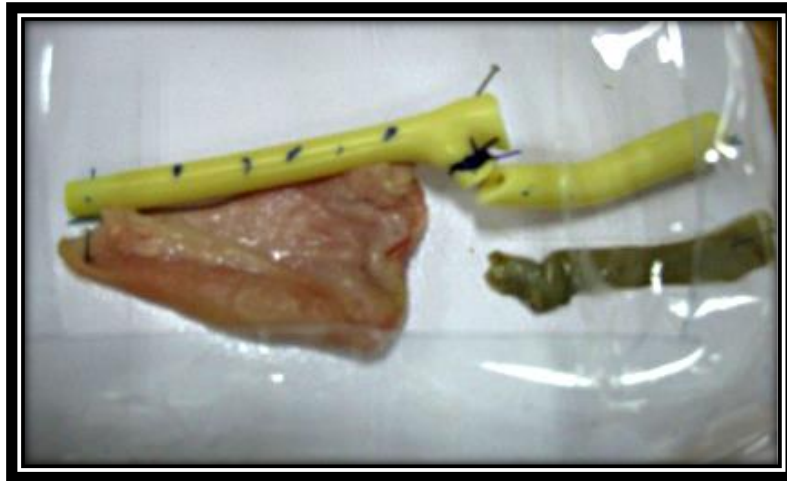


Figure 12

A 3/0 Vicryl stay suture is placed in the upper pouch and also in the lower pouch to facilitate traction. A transverse incision is made in the upper pouch.

The corner stitches are placed first using 5/0 PDS (from outside in and then inside out so that the knot is on the outside) as in Figure 13.

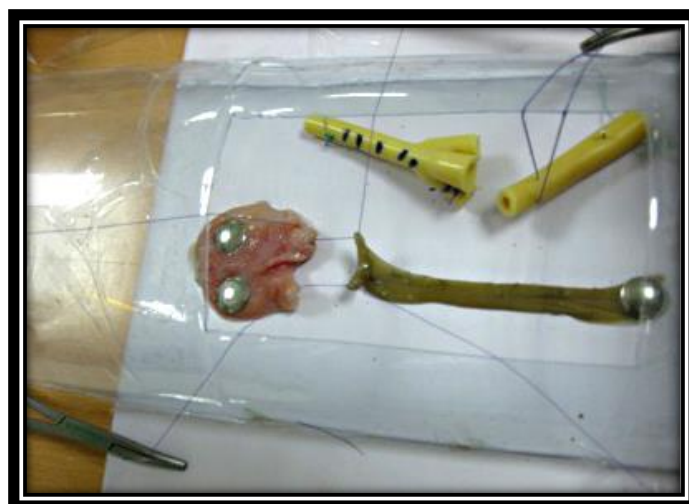


Figure 13

Then the posterior wall of the anastomosis is approximated using interrupted stitches (Figure 14).

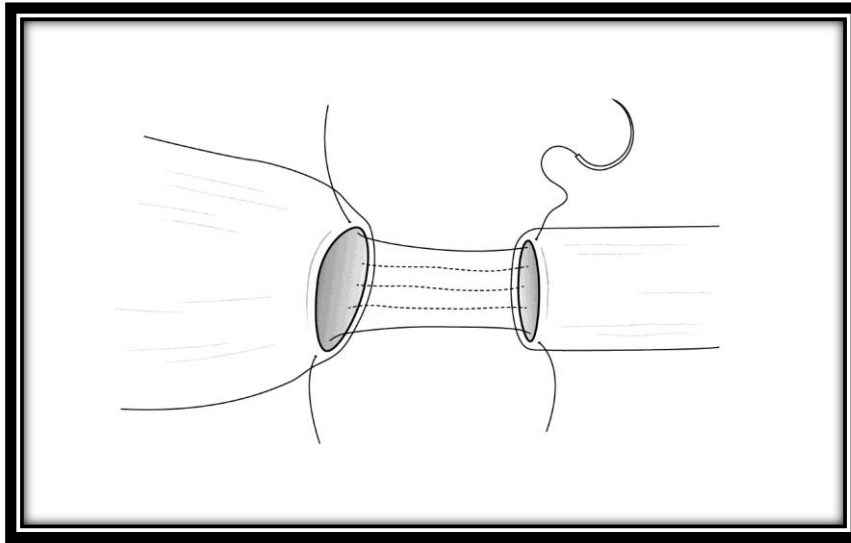


Figure 14

The nasogastric tube is passed across.

Finally the anterior wall is closed (Figure 15a & b).

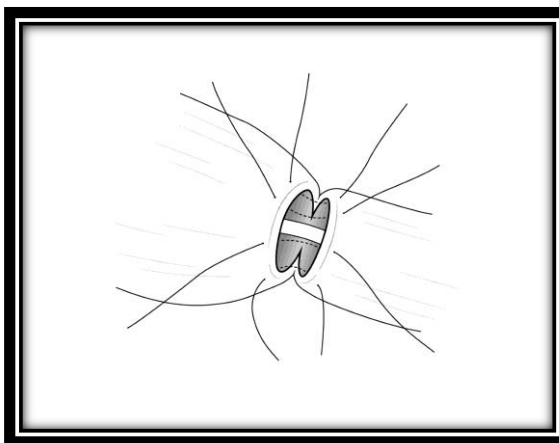


Figure 15a



Figure 15b

Pyeloplasty

Equipment:

Pad

Pins

Half a bladder (representing pelvis)

Loop of bowel (representing ureter)

5/0 PDS sutures

Nasogastric tube (representing a stent)

The first step in the pyeloplasty is excision of the redundant pelvis and stenotic ureter (Figure 16).

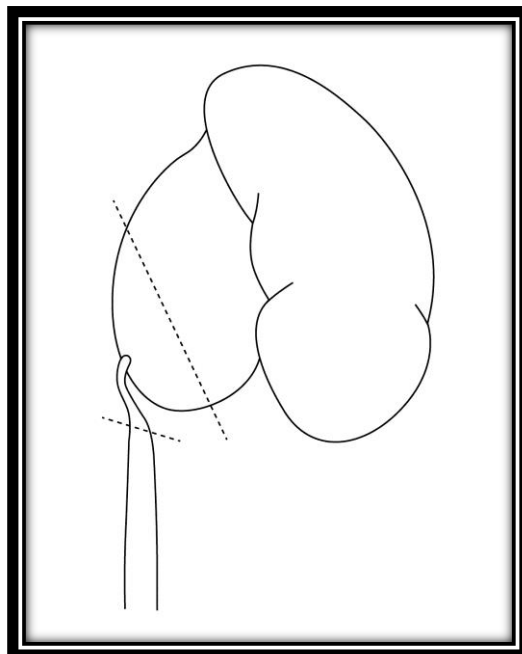


Figure 16

This leaves an open pelvis and ureter. The ureter is then spatulated laterally as demonstrated in Figure 17.

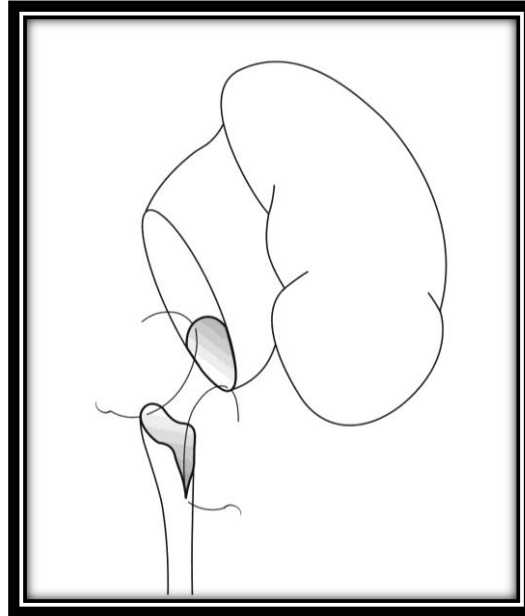


Figure 17

Anchoring sutures are placed from the tip of the spatulated ureter to the lower end of the pelvis.

The other stitch is from the medial end of the ureter to the upper end of the pelvis (Figures 18a, 18b).

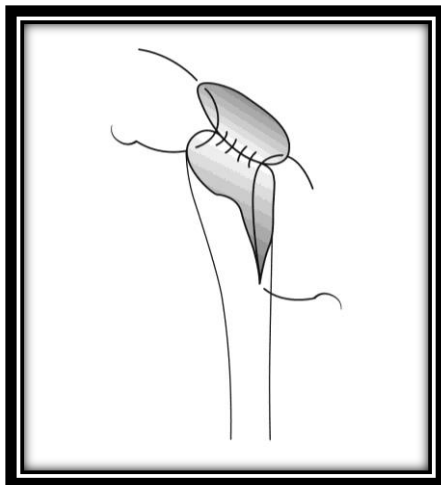


Figure 18a

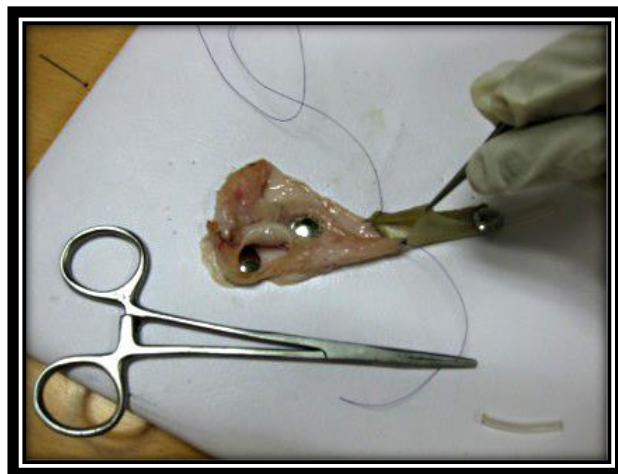


Figure 18b

The posterior wall of this anastomosis is performed and a stent is passed (Figure 19).

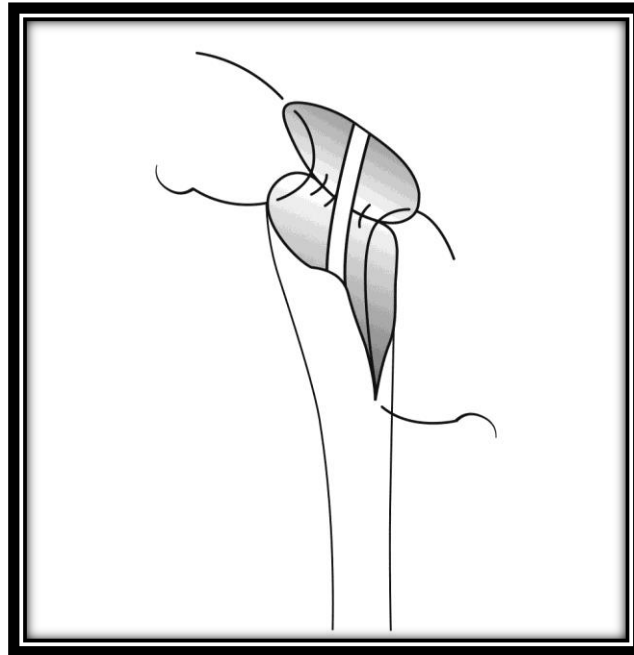


Figure 19

The anterior wall is then closed and the pelvis closed in a continuous manner (Figure 20). Using the stent, a leak test is then conducted



Figure 20