

## Analgesia after laparoscopic tubaligation using a technique of bilateral mesosalpinx infiltration

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### Abstract

Mesosalpinx-infiltration in ambulatory laparoscopic sterilization provides good postoperative pain relief. Probably due to anatomical and practical reasons, this block is used infrequently by gynecologists. If performed inadequately, this block could have its own set of complications whilst no technical description that we are aware of has been published. In relation to these considerations, we present a detailed technical approach for mesosalpinx-infiltration. Copyright © 1996 Elsevier Science B.V.

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### 1. Background

Prolonged postoperative pain relief following laparoscopic sterilisation has been reported with the injection of local anaesthetic solution (LAS) into both mesosalpinxes [1-3]. Nevertheless, this blocking technique has not gained much popularity among gynaecologists, for whom performing local anaesthetic blocks is not part of their daily practice. In addition, anatomical and technical aspects might also be reasons for its infrequent use.

Macro-anatomically, the thin and fragile mesosalpinx is not firmly anchored to its immediate surroundings but is loosely attached to its uterine origin. Technically, it is not easy to percutaneously direct a thin and flexible spinal needle, as suggested in some papers, through the abdominal wall, to cross the distended intra-abdominal cavity and to inject the membranous mesosalpinx.

Micro-anatomically, nociceptive visceral afferent outflow from the oviduct is dual [4]. Proximally, fibers

conducting pain sensation may travel medially and upward with visceral nerves. Nociception from the peripheral part of the oviduct may be conducted laterally via the ovarian and renal plexus-continuum to synapse in the spinal cord at the level of the lower thoracic vertebrae. Overlap between these two nerve structures probably exists. Partly successful blockade after placing falope rings can probably be explained by missing either of the two outflow tracts. Because of this dual innervation, LAS may have to be deposited more laterally as well.

Adequate postoperative analgesia is important for successful ambulatory surgery. On the basis of the above considerations, we describe an analgesia blocking technique for tubaligation by adding several practical modifications to the protocol of routine laparoscopy.

### 2. Method

The mesosalpinx is brought into clear laparoscopic view, by stretching and immobilising the organ instrumentally, with the proposed site of injection located in

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the part of the inner nerve containing connective tissue compartment where it is likely to be the widest. A suitable location for needle entry is the area where the fallopian tube and the ovarian ligament originate from the cornual part of the uterus. At this location, the distance between the two serosal coverings of the mesosalpinx measures approximately 5 mm. To be able to reach it without difficulty, the injection needle should be long enough to cross both the abdominal wall and the distance between this structure and the mesosalpinx. To avoid unwanted bending, introduction and advancement of the needle is facilitated with the aid of a rigid introducer needle/trocar set.

We propose the following technique (Fig. 1):

(1) Laparoscopy is carried out in the usual way. As soon as pneumoperitoneum is established, with the aid of an atraumatic uterine manipulator (a), the uterus is anteverted and pushed slightly upward and towards the abdominal wall. This procedure immobilises the uterus, shortens the distance between the oviduct and the abdominal wall and anchors the proximal part of the oviduct. With atraumatic forceps (b), the mesosalpinx is grasped at the distal end and pulled slightly laterally. A clear view of the stretched mesosalpinx is presented with the oviduct lying ventrally. Dorsally, the ovarium ligament is visible.

- (2) Under direct laparoscopic vision, a trocar/needle-set (c) can then be introduced suprapubically in the midline. For this procedure, an 8-cm thoracoscopy needle-set is useful. The inner trocar of this set is removed and replaced with a closely fitting rubber seal.
- (3) An 18-cm aortography needle (d) with a long bevel is then introduced through the rubber seal (f).
- (4) Under direct vision, the rigid introducer with the long needle inside is directed towards the cornual part of the uterus. The inner needle can then be advanced to reach the mesosalpinx between the origin of the oviduct and the ovarian ligament. The site of subserosal entry for the needle is at the insertion of the mesosalpinx on the uterus and should be located more towards the ovarian ligament than the oviduct. During injection the bevel of the needle is turned away from the oviduct. In this way, LAS will distend the mesosalpinx only while the oviduct remains free of LAS.
- (5) The inner stylet of the long needle is replaced with a 2-ml syringe containing saline and after negative aspiration a small amount of saline (1 ml) is injected. If the needle is in the proper position, only the mesosalpinx will bulge and a small balloon will form (g). At this stage, the direction of the bevel of the needle can still be adjusted to optimize the spread of LAS within the mesosalpinx only. A second 5-ml syringe containing 5 ml of LAS is applied. Five millilitres Bupivacaine 0.5% with epinephrine 1: 200.000 for each side is sufficient to infiltrate the lateral part of the mesosalpinx (h). After completion the same procedure is repeated for the other side.

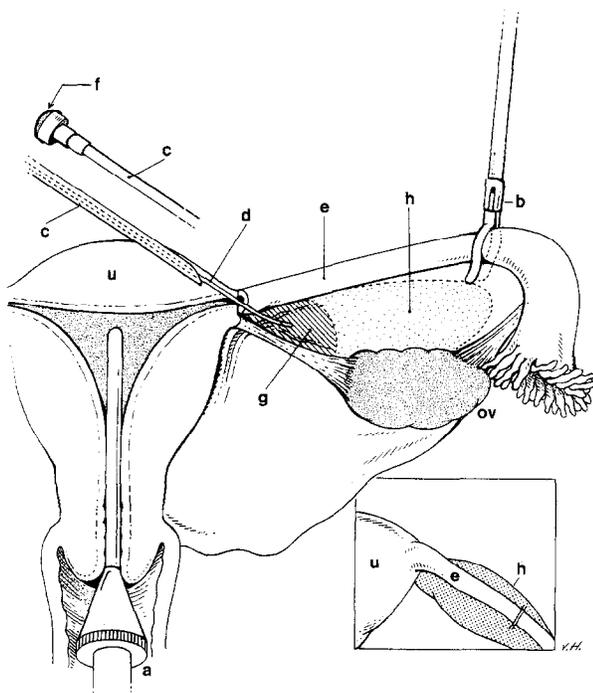


Fig. 1. Mesosalpinx infiltration technique. (a) Atraumatic Valtec Uterine mobilizer; (b) atraumatic grasping forceps; (c) rigid trocar with inner stylet removed; (d) 18-cm aortography needle; (e) oviduct; (f) sealing cap; (g) test dose with 1 ml saline; (h) 5 ml mesosalpinx infiltrate.

### 3. Results and discussion

Sixty patients have been treated. In 57, bilateral mesosalpinx infiltration was successful. One patient needed a mini-laparotomy because of multiple intra-abdominal adhesions. No mesosalpinx infiltration was performed. In two other patients, injection of the mesosalpinx was unsuccessful and the structure was repeatedly perforated. This resulted in a torn mesosalpinx in one patient. As the mesosalpinx can easily be punctured and ruptured, it is possible for this complication to occur with any kind of attempt at infiltration. One of these 60 women became pregnant. Subsequently, at laparoscopy it was observed that sterilization had been unsuccessful with the falope ring lying on top of the oviduct. This could have been due to a technical failure. However, in our training institution, checks and re-checks during all stages of the procedure are part of the protocol. Following routine sterilisation, pregnancies may still occur in 3-5/1000

cases when falope rings are used. This can be due to the method itself or result from surgical failure [5,6]. We cannot rule out the possibility that in our case, during the first laparoscopic attempt at sterilisation, the ring could have been placed in a segment of the oviduct which was previously rendered oedematous as a result of injection of LAS around the duct. However, this should not discredit our proposed modifications to routine laparoscopy, as this event might also occur with other injection techniques. As such, it would seem to be an inherent complication of any approach aiming at direct infiltration of the mesosalpinx. However, it may be advisable to occlude only such a part of the mid-isthmic portion of the oviduct which has a normal anatomical aspect and which is clearly discernible without having been rendered oedematous by infiltration of LAS.

Infiltration as we have described it, adds approximately 10 more minutes to the usual time taken for laparoscopic tubaligation.

No hematoma was observed following mesosalpinx infiltration. Nevertheless, this block may have its own set of complications and it could be possible that so far, these have not been reported.

In our group of patients, two such events have occurred. In relation to the clinical consequences of such complications, more clinical investigation into these matters is indicated.

#### 4. Conclusion

On the basis of anatomical and technical considerations, we describe an improved injection technique for bilateral mesosalpinx infiltration for analgesia after laparoscopic tubaligation. For complete analgesia, local anaesthetic solution should also reach the lateral part of the mesosalpinx. Tubal occlusion devices are preferably placed only in clearly visible and non-oedematous parts of the mid-isthmic portion of the oviduct.

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