

Long-term sequelae of abdominal cervical cerclage and a minimally invasive approach to resolution

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Abstract Cervical incompetence is diagnosed in 0.1–1% of all pregnancies and in 8% of women with repeated mid-trimester pregnancy loss. This condition may be managed by the application of a suture around the cervix, placed vaginally, abdominally, or laparoscopically. The case histories of two patients are presented, both of whom had abdominal cervical cerclage applied via laparotomy 4 and 6 years previously. Counselling and decision making processes are discussed, and the operative reports of the successful laparoscopic total removal of the cervical sutures are described. Published cases of laparoscopic cerclage removal are rare; indeed only four cases have been recorded. Three of these involved the removal of the suture after a very short period of time (5–7 weeks) with one further report of a partial removal being achieved laparoscopically. We have described successful laparoscopic total removal of two abdominally placed cervical sutures that had been in-situ for a prolonged period of time. In a unit with skilled laparoscopic surgeons and high-risk obstetricians, the potential for laparoscopic insertion and removal of abdominal cervical sutures exists.

Keywords Laparoscopy · Removal · Cervical · Suture · Cerclage

Introduction

Cervical incompetence is diagnosed in 0.1–1% of all pregnancies and in 8% of women with repeated (two or more) mid-trimester pregnancy loss [1]. Research has suggested that cervical cerclage should be offered to patients with three or more pregnancies ending before 37 weeks gestation [2]. There is also a strong body of clinical evidence suggesting that cervical cerclage decreases the occurrence of mid-trimester pregnancy loss. Sutures may be placed abdominally or more commonly, vaginally, in the cervix. The most frequent indications for trans-abdominal insertion of a cervical cerclage are congenital or acquired shortening of the cervix preventing application of a cervical suture and failed vaginal suture. Further indications include marked scarring of the cervix, deeply notched multiple cervical defects, penetrating lacerations of the fornix, subacute cervicitis, wide or extensive cervical conisation, and cervico-vaginal fistula [3].

Data in support of the superiority of the trans-abdominal approach over the trans-vaginal approach is lacking but the reported success rates of abdominal suture are 80–90% [4]. The perceived benefit of abdominal placement of the suture is that the cerclage is situated at the level of the internal os, and is therefore physiologic. Placing the suture abdominally reduces the risk of slippage of the suture and ascending infection and means that the suture may be left in-situ between pregnancies. The problems associated with the use of trans-abdominal sutures are that the suture cannot be removed without resort to surgery, delivery by caesarean section is necessary, and placement carries with it the risk of blood loss from the extremely vascular cervico-isthmic junction. In addition, multiple laparotomies can lead to excessive adhesion formation, increased abdominal wall trauma, and prolonged recovery time.

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Case report 1

A 42-year-old para 1⁺⁴ attended the gynaecology clinic complaining of pelvic pain and requesting sterilisation. In 1998, a diagnosis of cervical incompetence had been made following two miscarriages at 12 and 19 weeks in 1995 and 1996, respectively. Following these two pregnancy losses, a cervical suture was placed vaginally but a subsequent pregnancy miscarried at 23 weeks. In 1999, an abdominal cervical suture (polyethylene terephthalate, polyester tape) was inserted at 11 weeks gestation. This pregnancy proceeded to term, when delivery of a healthy female infant by Caesarean section was undertaken. One further subsequent pregnancy in 2002 terminated with evacuation of the uterus when a blighted ovum was diagnosed at 10 weeks gestation. Following discussion with regards to laparoscopic sterilisation concerning the possible cause for pain and the risk of suture erosion, the decision was taken to perform a laparoscopic sterilisation and removal of cervical suture.

Laparoscopy was performed using a high pressure insufflation technique (25 mmHg), with a primary umbilical port (12 mm) and two secondary ports (5 mm and 8 mm) placed in the left iliac fossa and suprapubically, respectively. The knot of the suture was identified posteriorly but was buried in peritoneum and could not initially be cut. The uterovesical fold was opened but the suture could not be identified anteriorly. Further attempts to free the knot posteriorly were then successful and the suture was cut using laparoscopic shears. The suture was then easily 'pulled through' and removed via the port in the left iliac fossa. A 1/8 inch Portovac drain (Howmedica, London) was placed in the pelvis. A single Filshie clip (Avalon Medical Corporation, USA) was applied to each tube, and the gas evacuated from the abdomen and the abdominal wounds were closed with polydioxanone (PDS). The operating time was 23 minutes. The postoperative course was unremarkable and the patient was fit for discharge when the drain was removed the following morning. At review the patient was pain free.

Case report 2

A 28-year-old para 4⁺³ attended the gynaecology clinic complaining of left iliac fossa pain. There was no significant gynaecological history or past medical history; however, her complex obstetric history included two pregnancies delivered by Caesarean section (36 weeks gestation in 1997; term plus two days gestation in 2000). Following this, there were three mid-trimester pregnancy losses in 2001 (14 weeks gestation), 2002 (18 weeks gestation), and 2003 (17 weeks gestation). The diagnoses of antiphospholipid syndrome and cervical incompetence were

confirmed in 2003 and, having discussed the case with a multi-disciplinary team, treatment for anti-phospholipid syndrome was commenced and an abdominal cerclage was placed. The procedure was carried out in December 2003 at 11 weeks gestation by laparotomy; no peri-operative complications were reported. The resultant delivery of a live infant by Caesarean section in May 2004 was followed by a further live birth by Caesarean section in January 2006. At the gynaecology clinic a diagnostic laparoscopy was suggested to rule out the diagnosis of endometriosis. The patient was counselled regarding the additional risks and benefits of cerclage removal before consenting to laparoscopy with or without laparotomy and removal of abdominal cervical cerclage.

Laparoscopy was performed using a high pressure insufflation technique (25 mmHg), with a primary umbilical port (12 mm) and two secondary ports (each 5 mm) placed in the left iliac fossa and suprapubically, respectively. The knot of the suture was identified posteriorly, divided, pulled through, and removed via the port in the left iliac fossa. The pelvis was otherwise normal, barring some flimsy adhesions around the left Fallopian tube that were lysed with scissors. The gas was evacuated from the abdomen and the abdominal wounds were closed with polydioxanone (PDS). The operating time was 10 minutes. The postoperative course was unremarkable and the patient was fit for discharge the same day. At review the patient had no pain.

Discussion

Cervical sutures are increasingly being inserted laparoscopically, and the technique for placement of sutures is evolving. Numerous reports claim that the procedure is safe and has advantages over the open method [5, 6]. There is mixed opinion however as to the optimal position of the suture knot. Some authors state that by tying the knot posteriorly one is less likely to have dense fibrous adhesions and therefore facilitate its straightforward subsequent removal via the Pouch of Douglas. Other published data favour tying the knot anteriorly, to allow easy identification of the knot at subsequent removal.

Cases of laparoscopic removal of abdominal suture are rare, indeed only four cases have been published. Three cases had had sutures placed only 5–7 weeks prior to their removal, and the indication for removal in two of these was to facilitate evacuation of retained products of conception following the diagnosis of fetal demise. The third case involved successful laparoscopic removal of a densely fibrosed cervical cerclage which had remained in-situ for 6 years [7, 8]. In one additional case only partial removal of the suture was possible due to the presence of fibrous adhesions.

In this series the surgeon in case 1 found the anterior aspect of the suture to be much more fibrosed than the relatively free posterior aspect. Fibrosis enveloping the suture material was not a feature of case 2. Case 1 was complicated by a previous failed vaginally placed cervical suture, the prolonged length of time since the suture had been inserted (6 years), and a previous Caesarean section. The cervical cerclage in case 2 had been in-situ for nearly 4 years and had further potential complications due to four previous Caesarean sections and an open placement of suture.

The decisions to attempt removal of the sutures in both cases were based on the patients' increasing pain over the previous years combined with the reported risk of erosion associated with leaving the suture in-situ [9]. Both cases had indications for laparoscopy other than removal of the cerclage, thus presenting the patients with the opportunity to have the suture removed as part of a concurrent procedure. The peri-operative and long-term benefits discussed above were also considered.

Laparoscopic procedures to place sutures appear to be safe both for the mother and fetus and obviate the need for laparotomy [5, 6]. In both cases described, the sutures were removed without undue event or complication. There would have been no need for dissection of the uterovesical fold in case 1 had the knot been easily visualised at initial assessment of the Pouch of Douglas. Difficult visualisation of the knot of the cerclage was overcome by the application of tension posteriorly on the free end of the suture.

In a unit with skilled laparoscopic surgeons and high risk obstetricians, the potential for laparoscopic insertion and

removal of abdominal cervical sutures exists. However, data regarding issues such as optimum technique, safety, feasibility, and outcomes is currently lacking. These deficiencies need to be addressed prior to the acceptance of this procedure as standard.

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