CASE REPORT

Laparoscopic surgery of unicornuate uterus with rudimentary uterine horn

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This report describes a new procedure for laparoscopic treatment of non-communicating rudimentary uterine horn when attached to the contralateral unicornuate uterus by a band of tissue. A retrograde dissection with primary bipolar coagulation and section of the band of tissue enables primary occlusion of the main blood supply. In our opinion, this new approach may prevent bleeding during laparoscopic dissection of the rudimentary horn and may avoid myometrial injury of the resting unicornuate uterus.

Key words: laparoscopy/rudimentary uterine horn/unicornuate uterus

Introduction

Unicornuate uterus with rudimentary uterine horn results from arrested development of one of the two Mullerian ducts. This uterine anomaly covers a wide range of anatomical variability and is divided into four subgroups according to the American Fertility Society classification of Mullerian anomalies: (IIa) rudimentary horn with cavity communicating to unicornuate uterus, (IIb) with cavity non-communicating, (IIc) with no cavity and (IId) with no horn (American Fertility Society, 1988).

Type IIb is the most common and clinically significant type. It is also susceptible to many gynaecological and obstetric complications that may be avoided by the removal of the rudimentary horn and its tube (Heinonen, 1997). Nevertheless, this subgroup may encounter fine anatomical variations, particularly in the attachment of the rudimentary horn that may influence surgical treatment (Pinsonneau and Goldstein, 1985; Schattman, 1995).

This report describes a technique different from any previously reported (retrograde, beginning at the fibrous band instead of the fimbriated end) for the laparoscopic removal of a non-communicating rudimentary horn.

Case report

A 15-year-old nulligravida with no surgical history except appendicectomy was referred from a secondary hospital for surgical treatment of unicornuate uterus with rudimentary uterine horn. The patient experienced progressive dysmenorrhea for one year and was not sexually active. The anomaly had been earlier revealed as a painful abdomino-pelvic mass. Ultrasound examination suggested that this time a right-sided uterus and the presence of a larger left pelvic mass containing blood (Figure 1). Diagnostic laparoscopy was performed and demonstrated a right unicornuate uterus with left rudimentary horn dilated by a large haematometra and an enlarged and thickened tube. Initial management consisted in incision and drainage of this haematometra and haematosalpinx. An intravenous pyelogram revealed normal kidneys and urinary tract. The patient was then referred to our hospital for definitive surgery.

Two months later, we performed an operative laparoscopy to remove the rudimentary uterine horn using a three-puncture technique: one 11 mm infraumbilical port, one 12 mm port, and one 5 mm port were placed in the right and left lower quadrants of the abdomen respectively. Initial inspection revealed no endometriosis and a decreased size of the rudimentary horn previously described. The left rudimentary horn was attached to the unicornuate uterus by a band of tissue (Figure 2). The band of tissue was coagulated with bipolar cautery and transected, facilitating separation of the rudimentary horn from unicornuate uterus and giving access to the uterine artery after dissection of a bladder flap. After coagulation and section of the main blood supply, the round ligament, and the utero-ovarian ligament were then transected with minimal blood loss. The course of the ureter was identified through the posterior leaf of the broad ligament and was well away from the operative field. Finally the left mesosalpinx was cauterized and cut, allowing the removal of the tube. The specimen was removed from the abdomen using the previous appendicectomy scar on a 2 cm long incision.

Pathological examination showed a Fallopian tube and a 35 mm long uterine cavity with hypotrophic endometrium presenting irregularly secretory aspects. The operating time was 120 min and the patient was discharged 2 days after the operation. After a 1 year follow-up, she has no dysmenorrhea and has regular menses without oral contraception.

Discussion

The incidence of unicornuate uterus is not well defined because many patients with this condition are asymptomatic or suffer from a wide range of symptoms which can manifest at any stage of adult life. In a recent report of uterine malformations,
Figure 1. Transvaginal ultrasonographic diagnosis of the rudimentary uterine horn. (A) The right-sided uterus (U) and the large left pelvic mass (M) with hypo-echoic content. (B) The distended ovoid pelvic mass (M).

Table I. Reported laparoscopic treatment of unicornuate uterus with rudimentary horn

| Author          | Year (years) | Age | Symptoms                      | Attachment to unicornuate uterus | GnRH agonist | Comments                                                                 
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<tr>
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<tbody>
<tr>
<td>Canis et al.</td>
<td>1990</td>
<td>30</td>
<td>Dysmenorrhoea and abdomino-pelvic mass</td>
<td>Not specified</td>
<td>3 months</td>
<td>Removal by a 2 cm low transverse abdominal incision</td>
</tr>
<tr>
<td>Mais et al.</td>
<td>1994</td>
<td>26</td>
<td>Dysmenorrhoea</td>
<td>Fibrous band</td>
<td>6 months</td>
<td>Use of endoscopic stapler and Semm macro-morcellator</td>
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<tr>
<td>Nezhat et al.</td>
<td>1994</td>
<td>28</td>
<td>Severe pelvic pain</td>
<td>Firmly attached</td>
<td>None</td>
<td>Simultaneous use of hysteroscopy to separate the two horns</td>
</tr>
<tr>
<td>Falcone et al.</td>
<td>1995</td>
<td>19</td>
<td>Dysmenorrhoea</td>
<td>Firmly attached</td>
<td>None</td>
<td>Use of endoscopic stapler and vaginal removal through a colpotomy incision</td>
</tr>
<tr>
<td>Shattman</td>
<td>1995</td>
<td>29</td>
<td>Infertility and dysmenorrhoea</td>
<td>Fibrous band</td>
<td>None</td>
<td>Morcellation and removal through the 12 mm port</td>
</tr>
<tr>
<td>Dulemba et al.</td>
<td>1996</td>
<td>26</td>
<td>Rudimentary horn pregnancy</td>
<td>Not specified</td>
<td>None</td>
<td>Vaginal removal (posterior cul-de-sac)</td>
</tr>
<tr>
<td>Falcone et al.</td>
<td>1997</td>
<td>23</td>
<td>Dysmenorrhoea</td>
<td>Fibrous band</td>
<td>None</td>
<td>Removal by enlarging a 10 mm trocar site</td>
</tr>
<tr>
<td>Amara et al.</td>
<td>1997</td>
<td>13</td>
<td>Acute abdominal pain</td>
<td>Firmly attached</td>
<td>None</td>
<td>Morcellation and removal through the infraumbilical incision</td>
</tr>
<tr>
<td>Giatras et al.</td>
<td>1997</td>
<td>29/25</td>
<td>Infertility and dysmenorrhoea</td>
<td>Fibrous band</td>
<td>None</td>
<td>Morcellation and removal through the 10 mm port in both cases</td>
</tr>
<tr>
<td>Present case</td>
<td>1998</td>
<td>15</td>
<td>Painful abdomino-pelvic mass</td>
<td>Fibrous band</td>
<td>None</td>
<td>Removal through the previous appendicectomy scar (2 cm)</td>
</tr>
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</table>

*Two cases were reported in this publication. GnRH = gonadotrophin-releasing hormone.

Raga et al. (1997) evaluated the incidence of this malformation as between 0.2% in fertile patients and 0.6% in the infertile. Approximately 90% of these unicornuate uteri with rudimentary horn are non-communicating but fine anatomical variations may be encountered particularly in the attachment of the rudimentary horn to the unicornuate uterus. In a series of obstructive Mullerian anomalies, Pinsonneau and Goldstein (1985) were the first to describe the unicornuate uterus with rudimentary uterine horn that could be either fixed or separated. When no fusion occurs with the contralateral duct, a fibrous or fibrous muscular band usually connects the two horns (Falcone et al., 1997). In this case the major blood supply, represented by the uterine artery, courses below the fibrous band and is easy to coagulate or ligate. On the contrary, when the rudimentary horn is firmly attached to the unicorneate uterus, the blood supply courses laterally to the unicorneate uterus and below the rudimentary horn, making haemostasis more critical. In addition dissection to develop a plane between the two horns is in such a case difficult but can be helped by the use of hysteroscopy (Nezhat et al., 1994).
Since the first report by Canis et al. (1990), laparoscopic resection of rudimentary uterine horn has rapidly become the standard treatment of such Mullerian dysgenesis, especially to prevent severe complications as ectopic pregnancy or extensive endometriosis. A review of the world literature reveals nine reports of laparoscopic removal of Mullerian remnants (Table I). Different techniques using scissors and bipolar coagulation or endoscopic staplers (Mais et al., 1994) are available but always include a downward dissection of the tube starting at the fimbriated end and ending by the separation from the unicornuate uterus. In our opinion a retrograde dissection as presented in this case can offer some advantages in terms of ease and safety, to remove the rudimentary uterine horn when attached to the contralateral unicornuate uterus by a band of tissue. The transection of the fibrous band allows primary coagulation of the uterine artery in order to prevent bleeding during dissection. Moreover an initial dissection of the rudimentary horn may be easier to perform in the case of a large haematosalpinx, as the view is not obstructed by the enlarged tube previously liberated. This precaution may avoid myometrial injury of the resting unicornuate uterus.

In order to facilitate the surgical procedure, it seems important to be prepared for either anatomical presentation. Recent literature has suggested that magnetic resonance imaging provides a considerably improved and accurate means of diagnosing and identifying Mullerian anomalies (Amara et al., 1997). Recently, three-dimensional sonography has been introduced into clinical practice and offers advantages over two-dimensional scanning as it provides fine anatomical details useful for preoperative planning (Heinonen, 1997). In our observation, an additional preoperative exploration with these techniques will probably allow the first diagnostic laparoscopy to be avoided.

This report is also remarkable because of the young age of the patient. Although severe dysmenorrhea began soon after menarche, no endometriosis was present. This is the reason why no gonadotrophin-releasing hormone agonist treatment was planned before laparoscopic surgery.

In conclusion, this different surgical procedure should be brought to the attention of laparoscopic surgeons and may be used in some cases to improve laparoscopic management of Mullerian anomalies.

References

Received on July 20, 1998; accepted on December 16, 1998.