



## Case Report

## Laparoscopically assisted treatment of imperforate hymen in a patient with ventriculo-peritoneal (VP) shunt for congenital hydrocephalous: A case report

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## ABSTRACT

**Introduction:** We report a case of laparoscopically assisted treatment of imperforate hymen in a patient with ventriculo-peritoneal (VP) shunt for congenital hydrocephalous.

**Presentation of case:** The patient presented primary amenorrhea and cyclical abdominal pain. At clinical examination a painful mass in the abdomen and normal secondary sex characteristics were observed. Perineal examination showed a bulging hymen and transabdominal ultrasonography and CT scan revealed a dense mass in the pelvis and abdomen. We diagnosed an imperforate hymen with haematocolpos and haematometra. The surgical procedure was performed under laparoscopic guidance in order to check the pelvic anatomy inside, to exclude the presence of adhesions and endometriotic lesions and to evaluate the ventriculo-peritoneal (VP) shunt.

**Discussion:** Imperforate hymen (IH) is the most common obstructive congenital anomaly of female genital tract. It is potentially accompanied by other female reproductive tract anomalies, suggesting a multifactorial genetic etiology. It usually presents during puberty, causing accumulation of menstrual products in the vagina (haematocolpos) or in the uterus (haematometra). Generally, the treatment consists in hymenotomy or hymenectomy, that allows the accumulated blood to be drained away. Laparoscopically assisted treatment of imperforate hymen is not routinely performed but it can be considered in particular clinical conditions. It is a viable procedure very useful to exclude female reproductive anomalies, the presence of pelvic pathology (adhesions and endometriosis) and to evaluate the ventriculo-peritoneal (VP) shunt and its possible complications (abdominal pseudocyst).

**Conclusion:** This is the first case of laparoscopically assisted treatment of imperforate hymen in a patient with ventriculo-peritoneal (VP) shunt for congenital hydrocephalous. Laparoscopic guidance has to be considered to exclude other female reproductive anomalies, pelvic pathology and abdominal complications (shunt dysfunction and abdominal pseudocyst).

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## 1. Introduction

The imperforate hymen (IH) is a rare congenital anomaly resulting from failure of distal canalization of the vaginal plate at the junction between the urogenital sinus and the vagina. It is potentially accompanied by other female reproductive tract anomalies and it is most often diagnosed in adolescent girls when menstrual blood accumulates in the vagina and sometimes also in the uterus. There is

quite often a considerable delay before a proper diagnosis is reached. The treatment is always represented by hymenotomy or hymenectomy. We report to our knowledge the first case of laparoscopically assisted treatment of imperforate hymen in patient with ventriculo-peritoneal (VP) shunt for congenital hydrocephalous. This case report is compliant with the SCARE guidelines [1].

## 2. Case report

We report a case of a 17-year-old girl with ventriculo-peritoneal (VP) shunt for congenital hydrocephalous. She was admitted to our

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Unit with primary amenorrhea and cyclical abdominal pain for almost one year. The patient denied any vaginal discharge and there was no history of sexual activity. No other members of her family had similar or other physical complaints. The medical history was unremarkable.

At clinical examination we observed a painful mass in the abdomen and normal secondary sex characteristics. Perineal examination showed a bulging hymen. Transabdominal ultrasonography revealed a dense mass in the pelvis and abdomen measuring about  $190 \times 81 \times 106$  mm. The same mass was observed with CT scan. We diagnosed an imperforate hymen with haematocolpos and haematometra.

After careful evaluation of the clinical case, in accordance with the patient who signed informed consent following a detailed discussion with our consultant, we opted for a surgical treatment under laparoscopic control aimed to check the anatomy inside, to exclude any pelvic pathology and to evaluate the ventriculo-peritoneal (VP) shunt. We wanted to exclude any shunt dysfunction due to abdominal and pelvic mass and the presence of abdominal pseudocyst (a common complication in hydrocephalus).

The procedure was performed by a team including our consultant and two surgeons with extensive experience in minimally invasive surgery.

Patient received anti-microbial prophylaxis before surgery. The hymen was opened surgically with a simple vertical incision, by using a cold knife, and a large quantity of menstrual blood (about 1500 cc) was drained from the vagina and uterus. Laparoscopy showed in real time very unique images of the uterine and vaginal regression during the menstrual blood drainage (Fig. 1). At the end of the procedure the anatomy of the pelvis was quite normal, except for adhesions between anterior uterine body and abdominal wall. Moreover, the right ovary was on the left side, probably due to the abnormal uterine position. After a careful inspection of the peritoneum we excluded the presence of endometriotic lesions and abdominal pseudocyst formation at distal end of VP shunt.

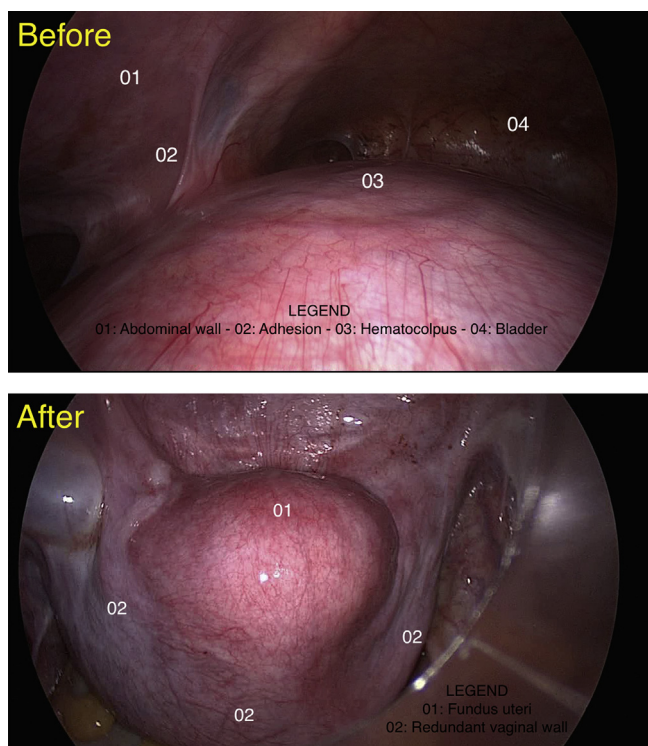


Fig. 1. Pelvic anatomy before and after hymenotomy.

Postoperative recovery was uneventful without any complication and the patient was discharged the following day. After one month diagnostic hysteroscopy showed a regular uterine cavity and normal endometrium. The menstrual cycle was regular.

### 3. Discussion

Female reproductive tract abnormalities are generally encountered in 2%–3% of women [2]. Imperforate hymen (IH) is the most common obstructive congenital anomaly of female genital tract, seen approximately in 1 out of 2000 girls [3]. Although it is congenital, it usually presents during puberty, causing accumulation of menstrual products in the vagina (haematocolpos) or in the uterus (haematometra). The most common symptom is cyclical abdominal pain, due to the distension of the vagina and uterus by accumulating menstrual blood [4]. There is primary amenorrhea but secondary sex characteristics are well developed. In case of primary amenorrhea in an adolescent with recurrent abdominal pain, urinary retention and/or lower abdominal mass this condition should be considered. Most cases of IH are sporadic; however there have been reports of familial cases with both recessive and dominant inheritance [5]. Late discovery of an imperforate hymen may lead to serious complications such as pain, infections, hydronephrosis, kidney failure and endometriosis with subfertility as a possible consequence. A retrospective study showed the presence of endometriosis (at the time of intra-abdominal operation) in eight of nine patients with haematocolpos or haematometra due to an outflow obstruction [6,7].

Generally, the treatment consists in hymenotomy or hymenectomy, that allows the accumulated blood to be drained away [8]. There are different types of incisions: simple vertical, T-shaped, cruciform, cyclical and X-shaped. The last one should be preferred because reduces the risk of injury to the urethra. The outcome is usually good and recurrences are rare. Laparoscopically assisted treatment of imperforate hymen is not routinely performed. In our case laparoscopy was performed in order to exclude other anomalies because imperforate hymen is potentially accompanied by other female reproductive tract anomalies, suggesting a multifactorial genetic etiology [2]. Also laparoscopic approach is useful to exclude the presence of pelvic pathology (adhesions, endometriosis) and in patients with ventriculo-peritoneal (VP) shunt it is indicated to exclude abdominal complications like blockage of the system and abdominal pseudocyst. Infact, abdominal pseudocyst formation at distal end of VP shunt can result in both features of shunt malfunction and abdominal signs and symptoms (pain and distention associated with a palpable mass). This letter has described the first case of laparoscopically assisted hymenotomy in patient with ventriculo-peritoneal (VP) shunt for congenital hydrocephalus.

#### Ethical approval

None.

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This study was not supported by any person or institution.

#### Author contribution

Luigi Nappi, Felice Sorrentino, Francesca Greco: study concept and design.

Felice Sorrentino, Stefano Angioni, Alessandro Pontis: acquisition of data.

Felice Sorrentino, Stefano Angioni, Luigi Nappi: drafting of the manuscript.

Gennaro Scutiero, Stefano Angioni: critical revision of the manuscript for important intellectual content.

#### Conflicts of interest statement

The authors have no conflicts of interest to declare.

#### Guarantor

Felice Sorrentino.

#### Research registration number

Not required.

#### Consent

Written informed consent was obtained from the patient for publication of this case report.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijso.2018.11.003>.

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