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Case series

Management of recurrent adhesion after vaginal recanalization surgery by using interdigitating Y-flap technique: Case series

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ABSTRACT

Introduction: Adhesion is one of complication after vaginal recanalization surgery that occurs due to the free tissue attached during the wound healing process and should be treated carefully. Otherwise, it will become obstruction to the vagina and lead to hematocolpos. The chosen techniques should prevent recurrent adhesion, synechia or stenosis. In this case series, we performed interdigitating Y-flap technique for managing recurrent synechiae post recanalization vaginal surgeries to prevent future stenosis.

Presentation of case: The first case was a 16 years old teenager, complained not menstruating and abdominal pain. Patient already had recanalization vagina surgery for correcting distal vaginal agenesis two years ago. After that, patient already had menstruation. There were hematometra, hematocolpos and vaginal adhesion from examination. The second case was a 12 years old teenager, complained having slight blood menstruation after septum excision surgery. From the examination, there was stenosis vagina at 3 cm proximal from hymenal ring. Both patients were treated by interdigitating Y-flap surgery for correcting the synechiae. After follow up treatment, there was no complaint from patients.

Discussion: Both patients were having synechia post vaginal recanalization surgery. To prevent recurrent synechiae, we decided to do interdigitating Y-Flap technique for correcting synechiae. With this technique, the scar tissue may not develop contractured scar and narrowing vagina.

Conclusion: Interdigitating Y-Flap technique may become an option for managing complex recurrent adhesion, synechia or stenosis. This technique is simple, easier and reduces the risk of stenosis in the future with better scar formations.

1. Introduction and importance

Adhesions or synechiae after surgery are the common complications of post vaginal recanalization surgeries. The vaginal adhesion may cause other complications such as vaginal shortening or narrowing and lead to sexual dysfunction. If the patients are non-sexually active, the vaginal adhesions need special consideration. In the patient who's sexually active, the adhesion will be separated by regular sexual intercourse [1]. Obstruction of the vagina may occur due to adhesion. The untreated obstruction will blockage the vaginal and accumulate the menstrual blood so it will become hematometra or hematocolpos. The incidence of postoperative vaginal obstruction recurrence is 15–20%. The patient will come seeking help with the complaint of cyclic abdominal pain or amenorrhea. Diagnosis should be made carefully to assess the severity of obstruction. To prevent the obstruction, many techniques can be able such as wound irrigation with physiological solution, heparin, dextran or membrane use [2].

The management of this obstruction consists of surgical and nonsurgical treatment. The nonsurgical treatment is vaginal dilatation [3]. The surgical procedure is main to remove the adhesion. The surgeon should consider the long-term effect of the technique chosen. The excess tissue removal will lead to shorten vagina. In this article, we presented two cases using interdigitating Y-flaps technique for correction of adhesion post vaginal recanalization surgery. Interdigitating Y-Flap is a technique that uses the Y- reversed incision at lamella externa septum and Y incision at lamella Interna 180° for the previous incision thus forming external and internal flaps. These flaps will fusion and interdigitate to produce zigzag scar. This technique will decrease the risk of stenosis post-surgery.

This case series has been reported in line with the SCARE criteria [4].

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2. Patient information

Our first case was A 16 years old, non-sexually active girl, with chief complaint of not having menstruation and cyclic abdominal pain 3 months before admission. There were no symptoms of urination and defecation. There was no family history of the same disease. Patient is senior high school student. She has no history of drug consumption. She had a history of Posterior Sagital Anorectoplasty (PSARP) with diagnosis atresia ani 9 years ago. Three years before admission, the patient was diagnosed with vaginal distal agenesis. The patient was performed vaginal recanalization with amnion mold double approach with laparotomy and colpotomy. We found that the unicornu uterus, with right cornu rudimentary, both ovarian and fallopian tube were normal. After surgery, catheter silicone was inserted. We did monthly follow-up until 9 months post operation and removed the catheter. After that, the patient still had regular menstruation every month. The menstruation day was three to seven days.

The second case was A 12 years old, teenage girl, with previous diagnosis with hematometra, hematocolpos, and distal transverse vaginal septum eight months ago. There were no symptoms of urination and defecation. There was no family history of the same disease. Patient is elementary school student. She has no history of drug consumption. History of abdominal surgery due to hematometra was two years ago. Patient was performed with vaginal septum excision continue with the insertion of amnion graft and silicone catheter. After surgery, we recommended the patient to do regular dilatation. However, she didn't performed to do the dilatation because of the pain. One week after surgery, we found that the vagina was narrowed so we decided to insert silicone catheter. The patient had menstrual period every month that came out from silicone catheter. Patient had been used silicone catheter for 8 months. When we tried to take the silicone catheter out, only a few menstrual blood came out. The genital examination during control in hospital showed the narrowing of vagina.

3. Clinical finding

In our first case, we founded normal vulva and urethra. There was adhesion in the anterior and posterior vagina at 2 cm proximal from hymen. There was no pinpoint with tube sonde. From rectal vaginal touche, there was palpable cystic mass superior from the rectum, sized 10 × 5 cm corresponding to hematocolpos which connect to enlargement uterus sized 6 × 5 cm (Fig. 1).

From gynecology examination of our second case, we found that vulva and urethra were normal. No blood or fluid was coming from vagina. There was stenosis vagina at 3 cm proximal from the hymenal ring. At the stenosis, there was hole with diameter 0,5 cm. From hegar dilatation, the dilator could be inserted at number 2 until 6. From rectal vaginal touche, there was palpable vaginal stenosis. The vaginal cavity could not be inserted with finger (Fig. 2).

4. Diagnostic assessment

In our first case, the abdominal ultrasonography showed the enlargement uterus which uterine cavity until cervical canal and vagina filled with echo internal mass (sized 6,35 × 5,06 cm at uterine cavity and cervix, sized 9,24 × 6,54 cm at vagina) which corresponding with hematometra and hematocolpos. Adnexa and ovarium were normal. From transperineal ultrasonography, the distance between urethra with canalis analis was 4,52 cm, urethra to anorectal angle was 2,31 cm, introitus to septum was 2 cm, with 0,71 cm thickness. In the second case, the synechia was identificated by physical examination and no other reproductive organ abnormalities were found so that it was sufficient to support the diagnosis. Therefore, we decided to not perform further examination (Fig. 3).

5. Therapeutic intervention

Both cases were treated by interdigitating Y-flap technique. Experienced urogynecologist performed the procedure. The first case was diagnosed with hematocolpos, hematometra due to synechia vaginal post neovagina amniograft and colpotomy. The synechia vaginal was released with interdigitating Y-flaps technique. The first step was the identification of synechia vaginal mucosa. After that, the Y-Reversed incision was made at the distal of synechia. The next step was mucosa dissection at distal synechia vaginal until the mobile flap was made. From aspiration, there were brownish fluid 250 ml. After that, Y incision was made at proximal of synechia vaginal mucosa. The mobile flap was made by dissection mucosa. Mucosa vaginal distal and proximal was sutured interruptus with PGA 3-0. Patient was stable after surgery. The blood loss was minimal (Fig. 4).

The second case was diagnosed with vaginal stenosis post excision vaginal septum. We performed interdigitating Y-flaps technique. The procedure was started with the identification of vaginal stenosis. After that, the Y reverse incision was done at distal side of stenosis following the dissection of mucosa vagina until the incision site mobilized. The next step was Y-incision at the proximal side of stenosis and excision of

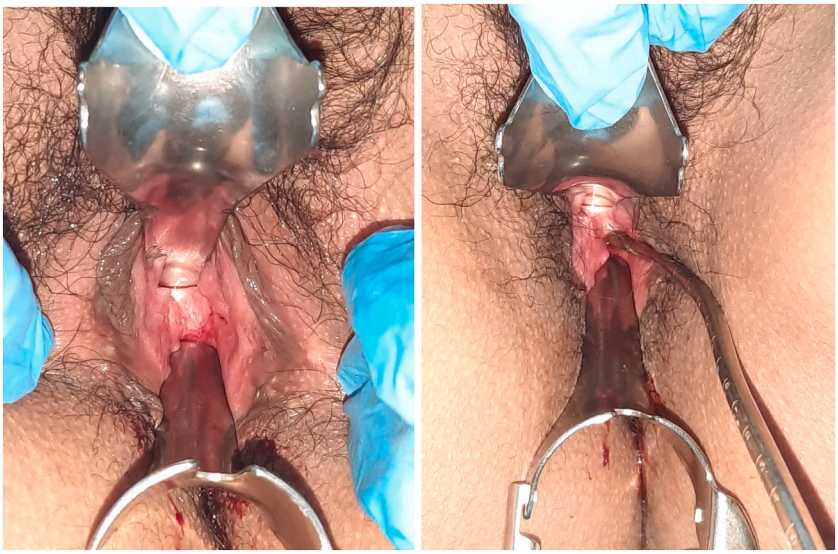

Fig. 1. First case. Anterior and posterior vagina attached 2 cm proxymal from vaginal opening, no pin point.

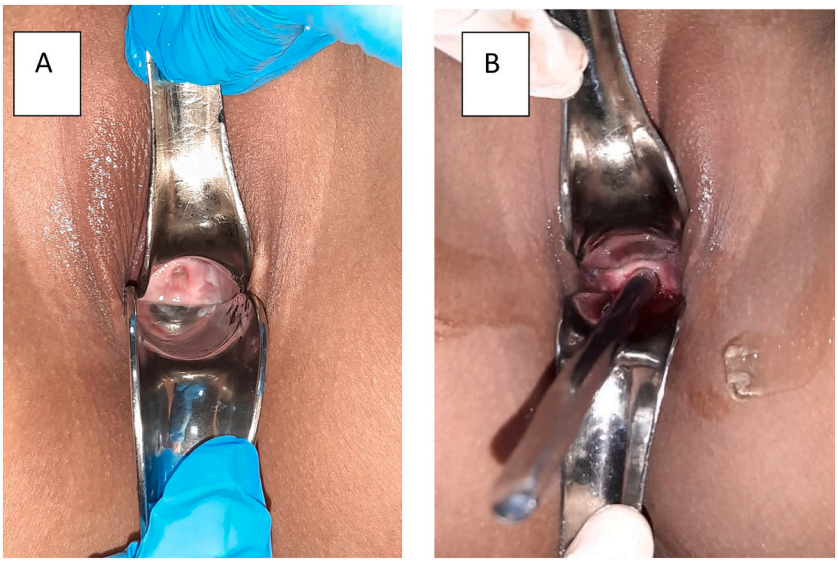

Fig. 2. Second case. (A) Stenosis at 3 cm proxymal from hymenal ring with hole at vaginal stenosis. (B) Performed dilatation with hegar dilator no 2 until no 6.

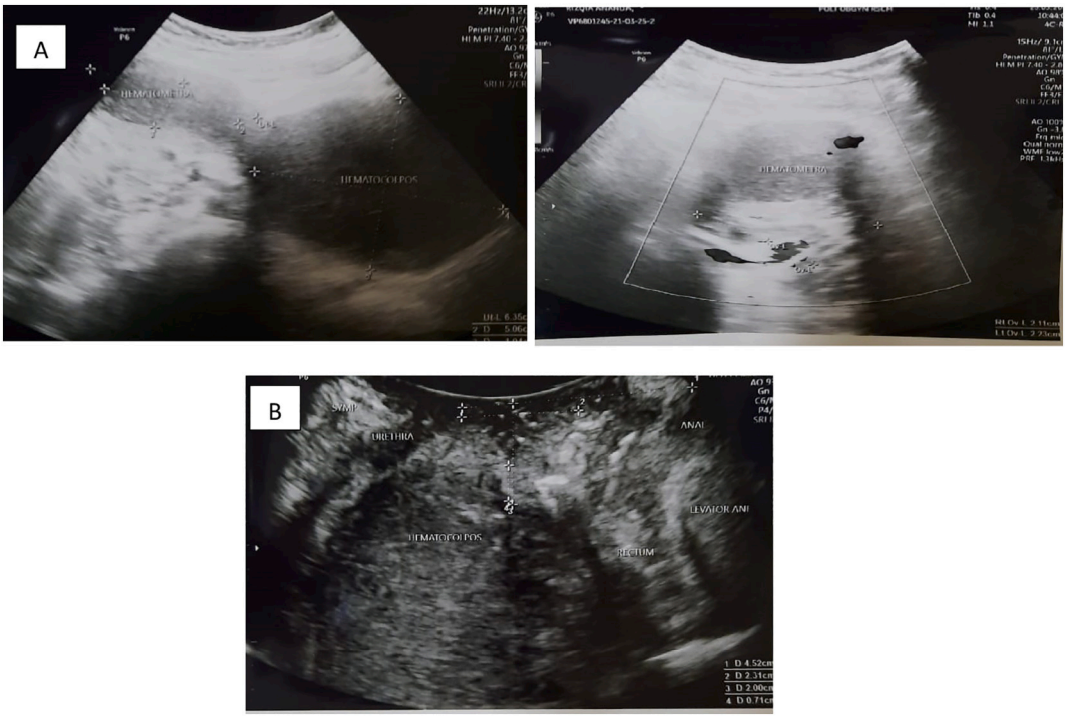

Fig. 3. Abdominal ultrasonography showed enlarged uterus, uterine cavity untik cervical canal and vagina filled with echointernal mass. B Transperineal ultrasonography showed the distance from introitus vagina to septum was 2 cm with 0.1 cm thickness.

fibrotic tissue until the mucosa is released. The proximal and distal side of mucosa vagina was sutured using PGA 3-0. The blood loss was minimal. The patient was stable (Figs. 5, 6).

6. Follow up and outcome

The outcome of both patients was good. The patient was discharged after 2 days postoperatively in satisfactory condition and there was no need for busination. In the first case, One week follow up after surgery, patient felt the decreases intensity of abdominal pain. Patient still had no menstruation. Three weeks after surgery, the patient had no complaint and had menstruation. From the vaginal examination, the total vaginal length was increased to 9 cm. There was no defect in vagina. In the second case, after three weeks after surgery, the patient had no complaint. There was no erosion or granulation and the total vaginal length was 7 cm. Six months after surgery, patient had regular menstruation. The mucosa of vagina anterior and posterior was smooth. There was no granulation. The total length of vagina did not change (Figs. 7, 8).

7. Discussion

Vaginal obstruction is one of the complications after vaginal surgery. Some congenital vaginal abnormalities such as transversal vaginal

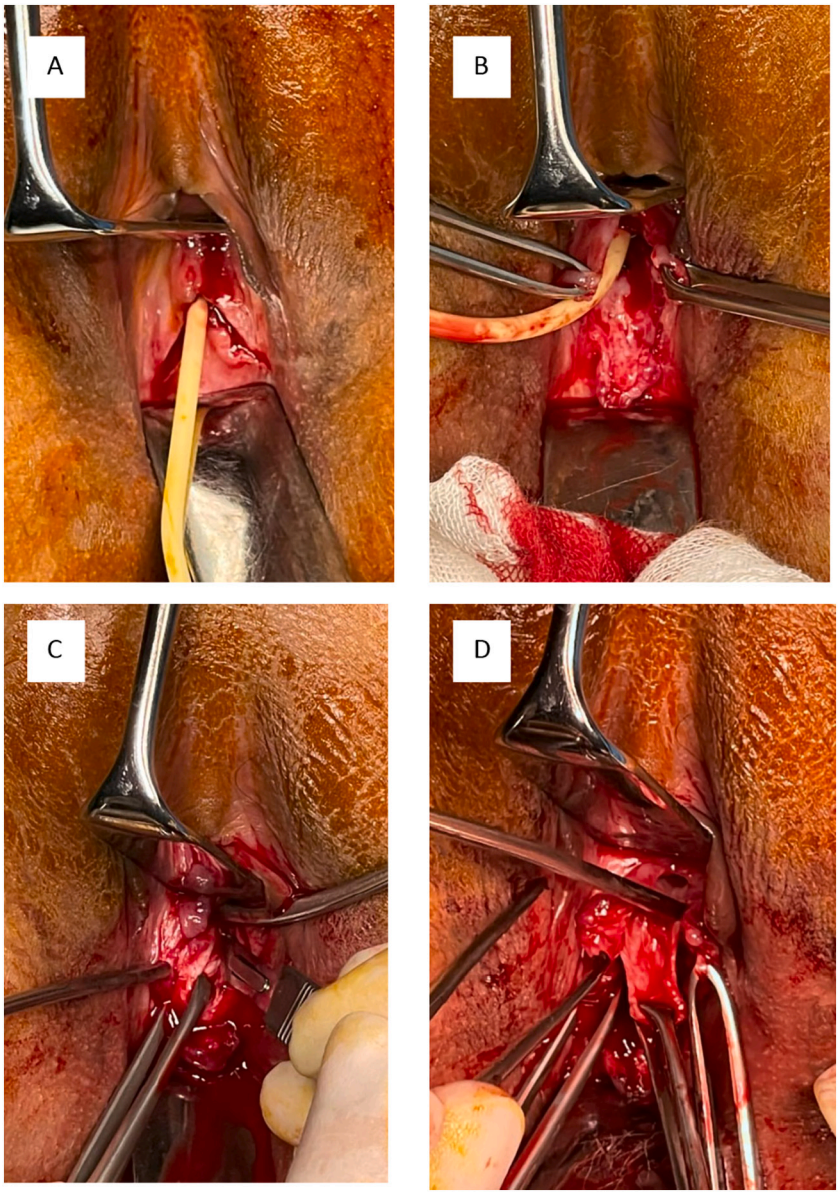

Fig. 4. First case. (A) Performed Y-reversed incision on distal side of the vaginal synechia, (B) dissection the vaginal mucosa on the distal part of vaginal synechia until flap mobile, (C) spuit aspiration of brownish fluid, (D) performed Y incision on proxymal vaginal mucosa of vaginal synechia.

septum or vaginal agenesis may require reconstructive treatment. The complication may occur during the wound healing process because the free tissues are attached. The incidence is 15–20% cases [2]. Other studies showed that over 10% of patients who undergo transvaginal pelvis reconstructive surgeries are having vaginal adhesions. Similar to our patients, the case report from Megadhana showed the recurrent stricture formation after excision. Joki-Erkilla and Heinonen also reported 2 of 3 patients with recurrent stricture formation after excision of complete TVs [1,3].

This adhesion may cause some symptoms such as cyclic abdominal pain or amenorrhea. As consequence, the hematocolpos or hematometra will occur because of the obstruction [2]. In our patient, there were also similar symptoms in the first case. In the second case, amenorrhea did not present because the stenosis has a hole so the accumulation of blood could come out from there.

The adhesion can be separated manually. In addition, it does not require surgical treatment if the patients are sexually active. Regular sexual intercourse enhances the separation of the adhesion. in contrast, after vaginal surgery, a non-sexual active patient should use the dilator to manually dilate the vagina. Daily vaginal estrogen therapy also has a role in separation. Patients with persistent adhesion need surgical treatment to remove the adhesion because it might result in vaginal shortening or narrowing [1]. Both of our cases didn't perform manual dilatation that increases the risk of adhesion. The young patient may have difficulty with manual dilatation. Some patients may have vaginismus or not the appropriate placement of the dilator. Mold use also has a negative effect. Mold use will increase the risk of having circular scar tissue and will lead to vaginal stenosis [5].

The surgical treatment is aimed to resect the adhesion. Various surgical techniques are available but until now, there is no guideline technique for this correction. Based on our research, this is the first article using interdigitating Y-Flap technique for correcting the adhesion post vaginal surgery. There is one study about the interdigitating Y-flap for transverse vaginal septum based on expert experience. The interdigitating Y-Flap is a technique that similar to double-cross plasty or Z plasty. Those techniques use septal lamella as a flap. But, the interdigitating Y-flap is easier to do than another technique because this technique only uses six flaps. Another technique uses eight flaps. This

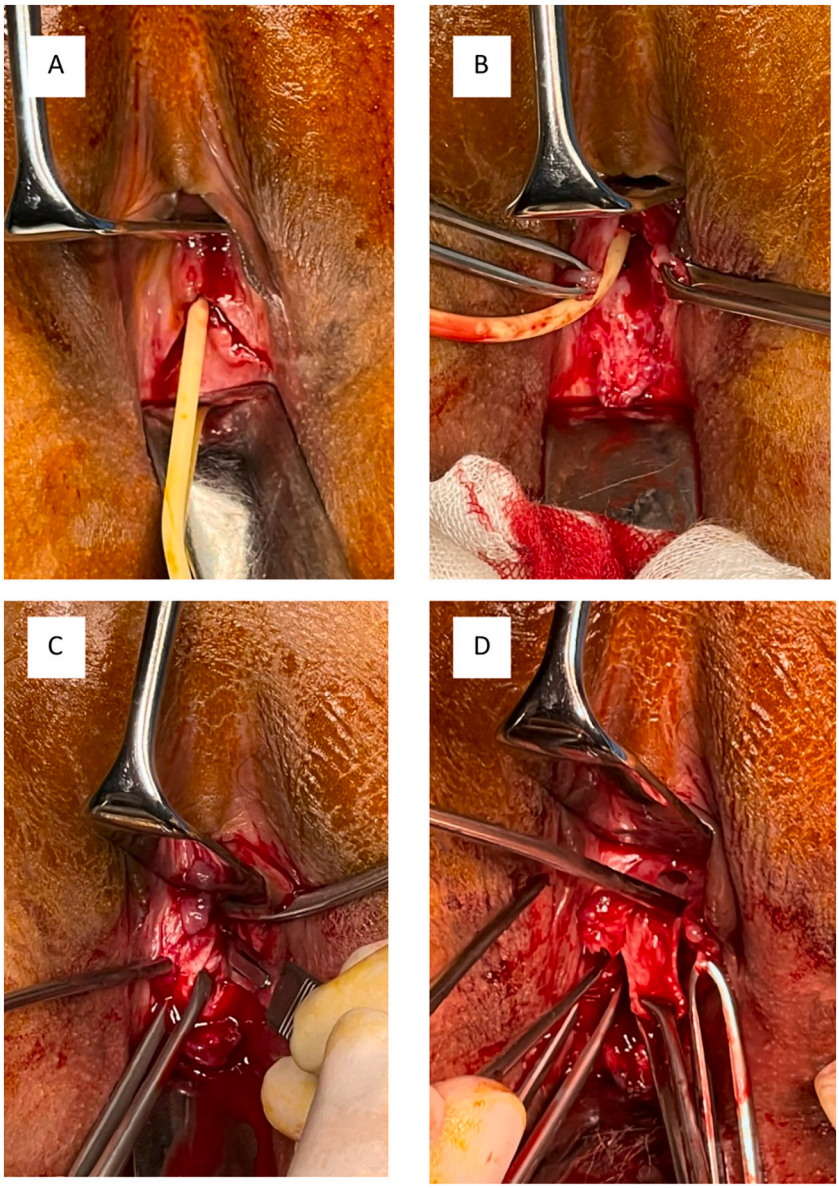

Fig. 5. Second case. (A) Performed Y-reverse incision on distal side of the vaginal stenosis, (B) dissect the vaginal mucosa, until reversed-Y incision on distal vaginal mucosa is free, (C) performed Y-incision on proximal side of vaginal stenosis, (D) perform scar excision until vaginal mucosa free and approximate distal and proximal vaginal mucosa.

technique has simple geometric design which makes it easier to use. The scar formation of this technique will be formed as zig-zag scar so that the risk of stenosis will reduce. Another technique will make straight scar. This technique will prevent shortening of the vagina because there is no excision of tissue [5].

In our cases, both patients were having synechia post correcting vagina abnormality surgery. This is similar to other studies in that the risk of obstruction may happen as complication. To prevent recurrent synechiae or stenosis, we decided to do interdigitating Y-Flap technique for correcting synechiae. With this technique, the scar tissue may not develop contractured scar and narrowing vagina. Follow-up after treatment showed good outcome. Patient did not feel pain or other complaints. The mucosa vaginal is smooth and no defect.

In our patient, both were not married yet. The patient should be educated about fertility. The intervention of draining accumulated menstrual blood may preserve fertility but still need to be followed up for long-term outcomes after surgery. If the patient wants to pregnant, more investigation can be carried out to examine the genetic pathologic [3].

8. Conclusion

One of the complications after recanalization vaginal surgery is the adhesion or stenosis of free tissue during the wound healing process. The management of this adhesion consists of surgical and non-surgical management. The surgical techniques should prevent the recurrent adhesion. Otherwise, it will lead to the obstruction. In this article, we recommended using interdigitating Y-Flap technique as an option for correcting recurrent adhesion or stenosis after recanalization vaginal surgery. This technique is simple, easier and also reduces the risk of stenosis.

Provenance and peer review

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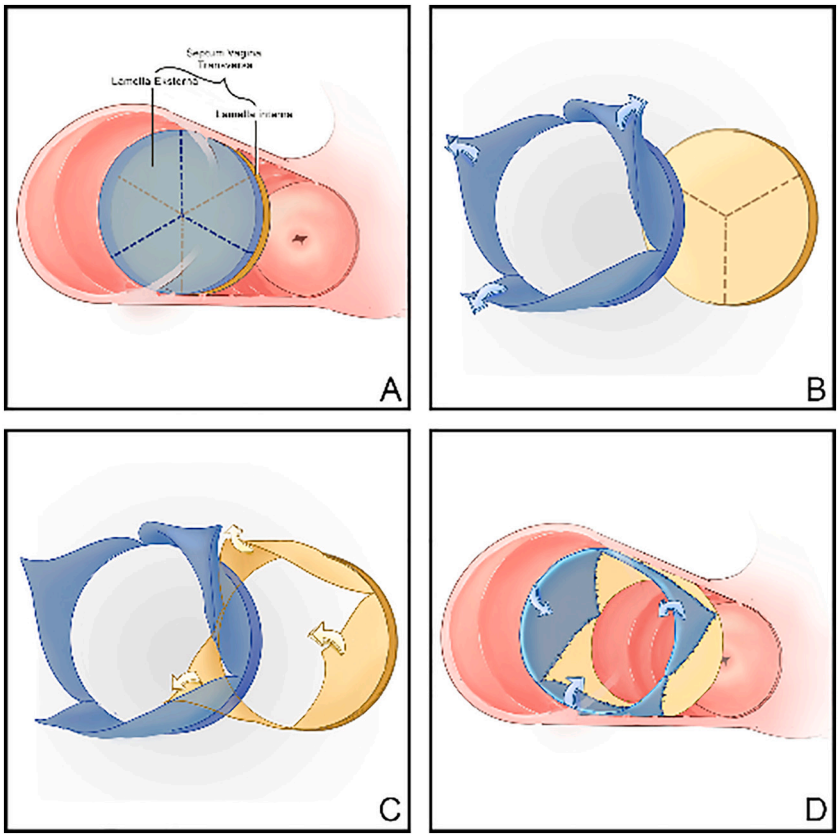

Fig. 6. The step of interdigitating y-flaps technique.
(A) The vaginal septum consists of external and internal lamella. The external lamella is located posterior to the internal lamella. (B) Y reversed incision is made on the distal side / external lamella. Y flap design is made on proximal side / internal lamella. (C) Dissection is performed until the flap is mobile. (D) Sutured to interdigitate the external and internal lamella flaps.

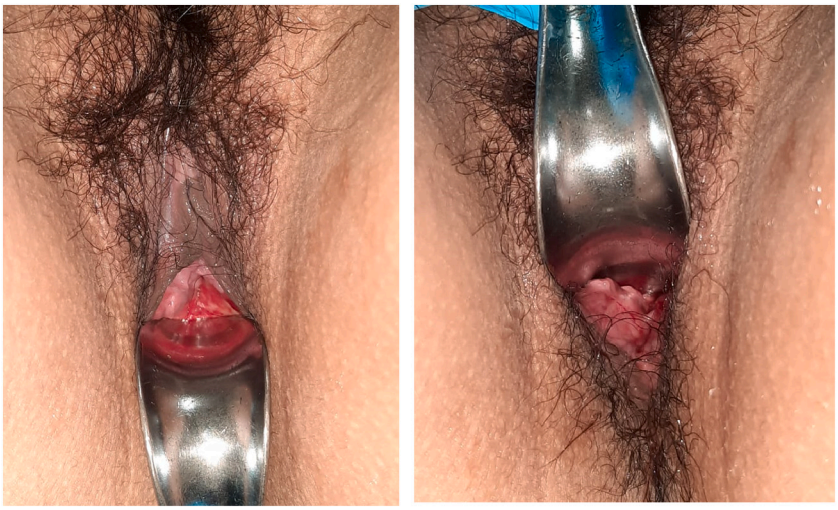

Fig. 7. Follow up after six months of surgery in the first case.

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Ethical approval

Not required.

Informed consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Research registration number

Not applicable.

Guarantor

Tyas Priyatini MD.

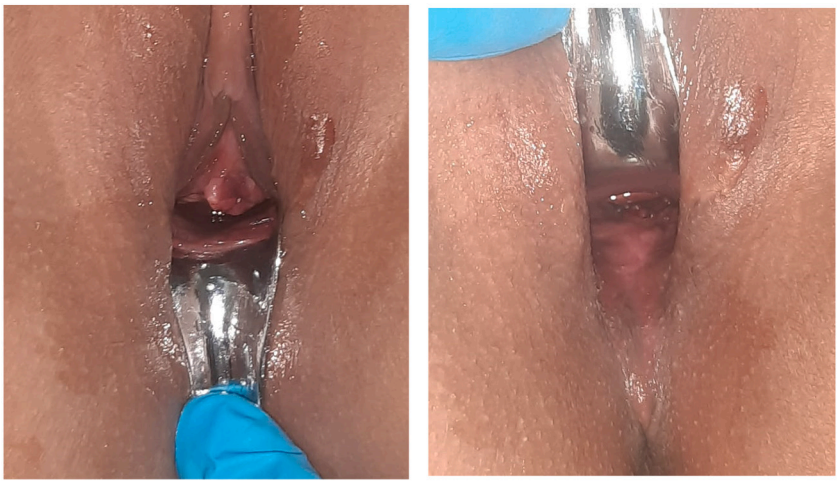

Fig. 8. Follow up after six months of surgery in the second case.

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CRediT authorship contribution statement

Tyas Priyatini: Conceptualization, Validation. **Fernandi Moegni:** Conceptualization, Validation. **Anggrainy Dwifitriana Kouwagam:** Methodology, Validation.

Declaration of competing interest

None declared.

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