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Complex Management of Labial Synechiae with Chronic Grade 4 Perineal Rupture: A Rare Case and Surgical Insight

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ABSTRACT

Background: Labial synechiae, characterized by the partial or complete adhesion of the labia, is a rare condition in adult women. This condition may arise secondary to trauma, infections, or post-surgical scarring. The case becomes more complex when accompanied by a history of obstetric trauma, such as a Grade 4 perineal rupture, which involves injury to both the anal sphincter and rectal mucosa. Early identification and appropriate management are crucial to prevent complications like chronic pain, dyspareunia, and urinary or fecal incontinence.

Case Presentation: We report the case of a 27-year-old primiparous woman presenting with extensive labial synechiae and a history of Grade 4 perineal rupture sustained during childbirth five years prior. She complained of recurrent genital discomfort, dyspareunia, and difficulty with urination. Physical examination revealed complete fusion of the labia minora and extensive scarring around the perineal and anal regions. Imaging studies confirmed the presence of post-traumatic adhesions without fistula formation.

Results: The patient underwent a successful surgical intervention involving labial adhesion release and perineal reconstruction. Postoperatively, the patient demonstrated marked improvement in genital and urinary function, and her dyspareunia resolved entirely. Follow-up at six months revealed no recurrence of adhesions, and the patient reported a significant enhancement in her quality of life.

Conclusion: This case highlights the importance of recognizing and managing labial synechiae in adult women, particularly when compounded by severe obstetric trauma. Surgical intervention, combined with appropriate postoperative care, can yield excellent functional and psychological outcomes.

Keywords: *Labial Synechiae, Grade 4 Perineal Rupture, Obstetric Trauma, Surgical Reconstruction, Dyspareunia*

1. INTRODUCTION

Synechiae has synonyms such as tissue agglutination or tissue adhesion, is a word that refers to a condition of adhesion between tissues that can be caused by several factors, often due to long-lasting inflammation so that local tissue continues to proliferate and eventually covers physiologically open areas or unites two or more organs or tissues that should be separate and not attached to each other as in surgical cases where there is synechiae or attachment between the intestines and surrounding tissues (1). Labia synechia itself is an attachment that occurs on the left and right labia in the vagina that meet each other in the middle, it can be a thin or thick attachment so that it will appear in the middle of the vagina a fibrous line that bridges between the two labia that experience the attachment. This adhesion can close the vaginal opening partially or totally and in this case the patient had almost total synechiae because the entire area of the vaginal door was covered by connective tissue formed due to the synechiae but had not yet covered the area of the External Ostium Urethrae (2).

Perineal rupture is a rupture or laceration of the perineum that occurs in women after vaginal delivery. Most lacerations will not cause long-term complications for women, however severe lacerations are associated with a higher incidence of long-

term pelvic floor dysfunction, pain, dyspareunia, and embarrassment. This can occur due to several factors such as the foetus being born being too large or the delivery method being incorrect. Perineal rupture itself is divided into several grading as follows (3).

Grade 1 : Superficial injury to the vaginal mucosa that may involve the perineal skin

Grade 2 : First degree laceration involving the vaginal mucosa and perineal body

Grade 3 : Second-degree laceration with anal sphincter involvement. It is further classified into three sub-categories

Grade 3A: Less than 50% anal sphincter tear

Grade 3B: More than 50% of the anal sphincter is torn

Grade 3C: External and internal anal sphincters torn

Grade 4 : Third-degree laceration involving the rectal mucosa

The incidence rate of vaginal labia synechiae alone is 1 to 5% in adolescent females and about 10% in female infants in the first 1 year of age. It can also occur in pre-pubertal young girls (aged 3 months to 6 years) and the highest incidence is at the age of 1-23 months. Labia synechiae in females usually spontaneously resolves at puberty, whereas for perineal rupture, more than 53-89% of women will experience some form of perineal laceration during childbirth. Most perineal lacerations that occur in vaginal delivery can be classified as first or second degree. Of these lacerations, 60-70% will require suturing (4).

Case Presentation

Female patient aged 27 years came to the emergency room of RSIA Sitti Khadijah 1 Makassar on July 7, 2024 with complaints of a closed birth canal approximately 2 weeks ago due to synechiae or adhesions on both left and right labia. history of blood discharge other than menstrual blood does not exist, history of vaginal discharge a few days after giving birth until before mens there is a clear colour and fishy smell, history of trauma does not exist, headache does not exist, dizziness does not exist, nausea vomiting does not exist. History of last menstruation on 2 July 2024, history of childbirth on 29 April 2024 assisted by a midwife, the patient said that during childbirth there were many tears in the birth canal which were stitched by the midwife, history of poor vaginal hygiene by washing from the posterior (anus) to the front (*ostium urethrae externa*).

On physical examination, a general condition of moderate pain and compos mentis was found. Vital signs were blood pressure 110/80 mmHg, pulse 90x/min, temperature 36.5^{o} C, breathing 20x/min. Vaginal examination revealed a synechiae on the vaginal labia minora with a length of +- 3cm which extended in the posterior *fourchette* area to the middle labia minora and left an opening area at the *external urethral ostium*. This made every time the patient wanted to micturate, the emission from the micturition would flow out of the area that was not covered by the synechiae in the anterior vagina, this also made the patient's menstrual blood come out little by little through the uncovered area.

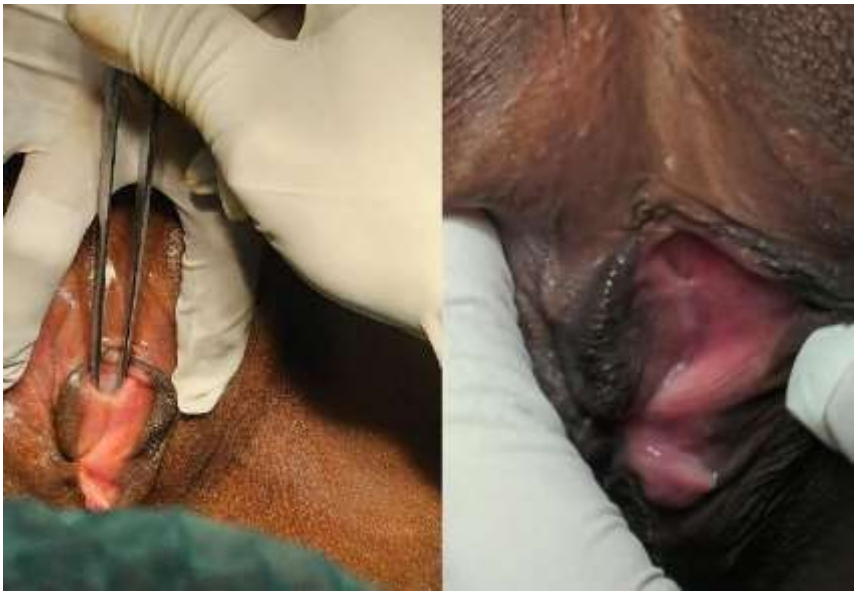

Figure 1. *Synechiae* that occurred on the patient's vaginal labia and left only a small opening on the anterior area of the vagina near the *External Urethral Ostium*

Routine blood work: *white blood cells*: 8.15x 103 /uL, haemoglobin: 14.6 g/dl, platelets: 338 x 103 /uL. Based on anamnesis, physical examination, and supporting examination, a diagnosis of Labia Vagina Synechiae was made. The management in this case was observation of general condition, vital signs, hiss, IVFD RL 28 tpm, injection of ceftriaxone 1 gr / 12 hours / IV, and planned for surgery with the aim of incising the synechiae.

Figure 2. The surgery performed on the patient, this action is a Vaginal Synechiae Incision using surgical scissors that are closed and then use the tips of the scissors to make an incision on the synechiae.

After the incision of the synechiae, it was found that there was an old Grade 4 Perineal Rupture in this patient which had extended to the rectum area which was not neatly sutured so that there was still a part of the rupture that was still open between the vagina and the patient's rectum area. This led the patient to be given sphincteroplasty and perineoplasty to repair the patient's anal rectum and perineum properly.

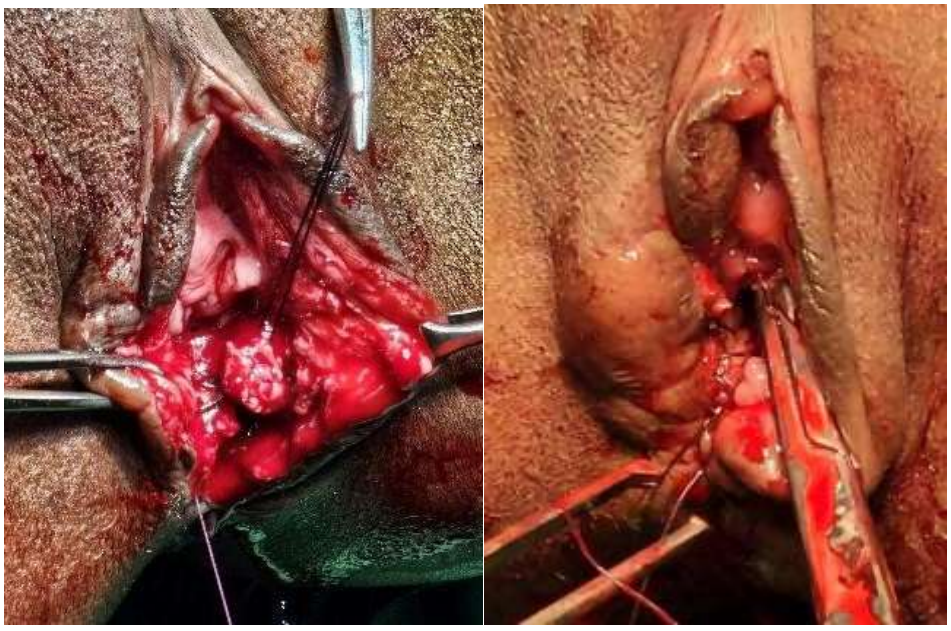

Figure 3: The left image shows a grade 4 perineal rupture long after the incision of the labia synechiae. The right image shows the Sphincteroplasty and Perineoplasty performed on the patient with the aim of repairing the sphincter and perineum in this case.

Follow Up

Patient monitoring on the first postoperative day (Monday, 08 July 2024), patient complaints in the form of pain in the area of surgery that was sutured. Physical examination of the patient in the form of vital signs within normal limits, on examination of the postoperative area found an udema in the patient's vulva area. The therapy given was continued therapy, IVFD RL 20 tpm Paracetamol 1 g/8 h/iv Ranitidine 50 mg/8 h/iv Cefotaxime 1 g/12 h/iv Lactulose Syrup 3x1 cth with advice to eat and drink if there is no nausea vomiting and intestinal peristalsis is present Sitting mobilisation 6 hours post op Obs KU, TTV, Bleeding, Urine Production

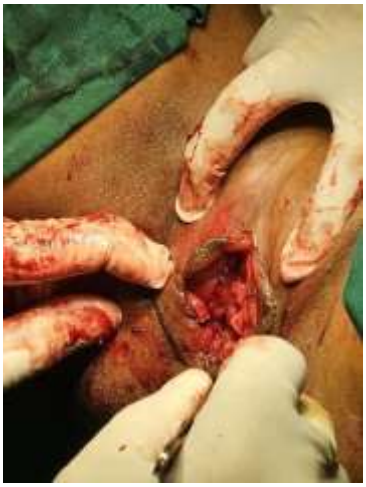

Figure 4. Day 1 Follow Up

Monitoring the patient on the second day (Tuesday, 09 July 2024), the patient's complaints were still the same as the previous day, namely the patient's complaints in the form of pain in the surgical area that was sutured. Physical examination of the patient in the form of vital signs within normal limits, on examination of the postoperative area found an udema in the patient's vulva area. The therapy given is continued therapy with some education such as education on vaginal hygiene, education on not having intercourse for 6-8 weeks postoperatively, education on eating soft foods, avoiding meat, aff catheters and aff IVs.

Figure 5. Day 2 Follow Up

Patient monitoring on the third day (Wednesday, 10 July 2024), the patient's complaint was pain in the suture area was reduced but accompanied by mucus, physical examination of the patient in the form of vital signs within normal limits, on examination of the postoperative area found clear lender in the patient's vulva area. The therapy given was Paracetamol tab 500 mg 3x1 Ranitidine tab 150 mg 2x1 with the same education as before.

Figure 6. Day 3 Follow Up

2. RESULT AND DISCUSSION

Synechiae has synonyms such as tissue agglutination or tissue adhesion, a word that refers to a condition of attachment between tissues that can be caused by several factors. Labia synechia itself is an attachment that occurs on the left and right labia in the vagina that meet each other in the middle, it can be a thin or thick attachment so that it will appear in the middle of the vagina a fibrous line that bridges between the two labia that experience the attachment (5).

The incidence of synechiae of the vagina reaches 1 to 5% in adolescent women and 10% in infant girls in the first year of their lives. Even in the study of Dhaiban M. A. R. and Chaudhary M. A. said that the incidence of vaginal synechiae can occur in women before puberty (age 3 months to 6 years) with the highest incidence occurring at the age of 1-23 months (6). Most patients with labia synechia do not have clinical symptoms or are asymptomatic but clinical symptoms that may occur in patients will mostly be about discomfort and even dysuria when urinating, especially if the synechiae have covered the orificium urethra, although basically most patients will be aware of the closure of their vaginal opening (7). Other complaints also include menstrual blood that may come out little by little so that the patient feels that the length of the period is prolonged because the outlet of the vagina is blocked so that the blood is difficult to escape freely. Complaints arising from the patient's partner and the patient herself can also be in the form of not being able to have sexual intercourse because the vaginal canal is covered by adhesions between the labia with each other (8).

There are several underlying factors why synechiae on the vaginal labia can occur, one of which is suspected due to a hypoestrogen state which is a condition when a person's body, especially women, experiences a decrease in estrogen levels or has not formed estrogen properly, in the case of children, especially in newborns, Estrogen levels will certainly be low this is because newborn children they still cannot properly regulate the metabolic process of estrogen formation because their reproductive organs that are responsible for forming estrogen have not matured properly in this case are the ovaries, coupled with the state of newborn children will be interrupted estrogen supply while they are still in the womb when they are still often given estrogen supply from maternal or mother (9). This can also occur in women who have experienced menopause so that the menstrual cycle itself has stopped and the help or supply of estrogen from the process of the menstrual cycle will be greatly reduced. In patients with malnutrition can also experience hypoestrogen. This is because estrogen itself in addition to being formed from the results of the ovarian cycle process in the reproductive system, estrogen is also formed by adipose tissue or fat tissue so that malnutrition will also have an impact on the amount of estrogen circulating in a woman's body and even in a study revealed that patients who do not experience malnutrition are at least less at risk of experiencing early menopause or so-called premature menopause (10), namely menopause that occurs under the age of 40 years. In this case the patient only has a Body Mass Index/BMI of 13.73 kg/m2 which based on WHO standards the patient is classified as Underweight so a hypoestrogen state must be suspected as one of the factors behind the occurrence of vaginal synechiae in this patient and it can also be seen that this patient does look very minimal adipose tissue on her body (11).

Estrogen itself has a function in maturing the vagina in terms of maturing the function of the glands so as to release secretions that will lubricate the vaginal walls so as not to experience dryness and easily stick together, estrogen also has a function in maturing the vagina by making the vagina thicken and soft so that it is not stiff and thin and its elasticity will be maintained.

In other studies (12), it is also said that the hypoestrogen state will lead to the unification of collagen fibres and fragmentation or destruction of elastin fibres in vulvovaginal tissue, which when this happens will result in reduced mucosal elasticity, decreased rugae, and narrowing of the vaginal opening so that it will be easy for infection due to lack of lubrication, dry tissue conditions, and this will greatly facilitate the process of synechiae to occur (13).

In addition to the state of hypoestrogen, poor hygiene can trigger infections that occur continuously in the vaginal area, especially in the labia such as vaginitis and vulvitis or surrounding areas such as urinary tract infections can also trigger synechiae or adhesions, this is because the inflammatory process that occurs can trigger swelling so that the two labia easily meet each other, usually the labia begin to fuse at the lower end (posterior fourchette) and move towards the clitoris (14). The results of the history of this patient also show that the patient's hygiene is not good because the pattern of washing the vagina starts from the back to the front. This will certainly affect the hygiene of the patient's vagina because the back-to-front washing pattern will bring unwanted pathogens from the anus to the vagina and will lead to vulvovaginitis which will certainly increase the risk of vaginal synechiae (15).

Trauma that occurs in the vagina can also trigger synechiae in the vagina such as post partum conditions that experience lacerations and are given perineal sutures that are too high, generally damaged tissue will undergo re-epithelialisation and if excessive it will form excessive tissue and in cases of synechiae can trigger closure of the vaginal opening due to the union between the labia. Basically the wound healing process will go through 3 main stages namely inflammatory, proliferative, remodelling, a deep wound will trigger fibroblasts in the skin to produce collagen and inflammatory mediators such as Transforming Growth Factor-Beta 1 (TGF-beta 1) then TGF-beta 1 will stimulate the formation of elastin and collagen which will certainly lead to excessive connective tissue remodelling. In addition to elastin and collagen (16), TGF-beta 1 will also trigger the formation of myofibroblasts which will result in tension in the remodelling tissue, in a study hypothesised that the tension that occurs in the wound area will create an excessive response in the process of tissue remodelling and the uncontrolled release of many pro-inflammatory agents such as tumour necrosis factor-alpha, interleukin-1 alpha, interleukin-1 beta, and interleukin-6 which will eventually lead to excessive processes in the formation of new tissue that will close the wound. In this patient, it was clear that when the synechiae were incised, there was an old grade 4 perineal rupture that was not sutured neatly and well, which was also one of the presumptions that precipitated the occurrence of vaginal synechiae in this patient (17).

Some other conditions can also trigger synechiae of the labia vaginalis with unclear mechanisms such as in turner syndrome. The long-term effects of radiotherapy on the vagina have also been found to trigger synechiae of the vaginal labia (18). Generally, the management given to patients with labial synechiae in children and menopausal women is to apply estrogen cream to help separate the labial synechiae due to hypoestrogen, but in cases of labial synechiae with infection or postpartum with perineal laceration, surgery may be an option. There are several options depending on the patient's age, degree of fusion, and symptoms (19). In preteen girls with partial synechiae, without symptoms during urination and without recurrent urinary tract infections, a hopeful attitude can be taken as, in most cases, the synechiae heal spontaneously during pubertal development due to increased oestrogen levels (20). Adhesions are separated with gentle traction. Blunt dissection can be performed using arterial forceps followed by regular dilatation (21).

3. CONCLUSION

Synechiae labia vaginalis is a condition of adhesion between the left and right labia of the vagina resulting in closure of the vaginal opening. Generally, synechiae of the labia vaginalis occur in pre-pubertal young girls (aged 3 months to 6 years) and the highest incidence is at the age of 1-23 months. Labia synechiae in women usually occur spontaneous resolution at puberty, patients usually present with complaints of discomfort when micturition and even experience dysuria and apareunia. This situation can occur due to several factors such as hypoestrogenic conditions, recurrent infections of the vaginal labia, postpartum perineal rupture and even long-term effects of continuous exposure to radioactive rays. Synechiae of the labia vaginalis can be treated with oestrogen cream or consideration of incision of the synechiae.

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Conflict of Interest

The authors declare that they have.

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