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Case Report

Acquired complete labial adhesion in a reproductive-age woman: a rare case report and review of literature

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ABSTRACT

Labial adhesion (labial fusion or agglutination) is commonly encountered in prepubertal and postmenopausal women owing to hypoestrogenic states. Its occurrence in women of reproductive age is rare and sparsely documented in the literature. A 26-year-old unmarried woman presented with dysuria, recurrent urinary tract infections (UTIs), and perineal pruritus. She reported regular menstrual cycles and exhibited normal secondary sexual characteristics. Examination revealed complete fusion of the labia minora obscuring the urethral meatus, clitoris, and hymenal opening. Laboratory investigations were unremarkable except for a positive urine culture. Pelvic magnetic resonance imaging (MRI) demonstrated normal uterine and ovarian morphology. Surgical adhesiolysis was performed with successful anatomical reconstruction. At 6-month follow-up, the patient remained asymptomatic with no recurrence and reported satisfactory sexual function. Labial adhesion can occur in reproductive-age women even in the absence of identifiable risk factors. Early recognition and appropriate surgical management yield excellent outcomes. Labial adhesion should be considered in the differential diagnosis of reproductive-age women presenting with recurrent urinary symptoms or vulvar discomfort. Timely intervention can prevent chronic urogenital morbidity and improve quality of life.

Keywords: Labial adhesion, Labial fusion, Reproductive age, Surgical adhesiolysis, Idiopathic, Case report

INTRODUCTION

Labial adhesion is characterized by partial or complete fusion of the labia minor. The condition is most frequently described in prepubertal girls and postmenopausal women, in whom it is principally attributed to hypoestrogenism.^{1,2} In contrast, its occurrence in women of reproductive age is uncommon and is typically associated with identifiable etiological factors.³⁻⁵

Recognized predisposing conditions in adults include postpartum genital trauma, lactational hypoestrogenism, chronic vulvovaginitis, poorly controlled diabetes mellitus, and dermatological disorders such as lichen sclerosus and cicatricial pemphigoid.³⁻⁵ The prevailing pathophysiologic mechanism involves denudation of

opposing labial epithelium secondary to inflammation or trauma, followed by progressive agglutination.^{1,6}

Affected individuals may present with dysuria, recurrent urinary tract infections, dyspareunia, menstrual outflow obstruction, or may remain entirely asymptomatic.¹ Early diagnosis is essential to prevent long-term urogenital morbidity and psychosexual sequelae.

Labial adhesion is well recognized in hypoestrogenic populations but is exceptionally uncommon during the reproductive years, as adequate estrogenization of the vulvar epithelium ordinarily prevents epithelial fusion. Most adult cases reported in the literature are associated with identifiable predisposing factors. Idiopathic complete labial adhesion in an otherwise healthy reproductive-age woman is exceedingly rare, with only isolated cases

documented to date. Herein, we report a case of complete acquired labial adhesion in a 26-year-old woman without any identifiable predisposing factor who presented with recurrent urinary tract infections despite preserved menstrual function. We discuss the diagnostic challenges, surgical management, and comparison with previously published reports.

CASE REPORT

A 26-year-old unmarried woman presented to the gynecology outpatient department with complaints of dysuria, recurrent urinary tract infections, and vulvar pruritus of approximately one year duration. Her medical history was unremarkable, with no known dermatological disorders, genital trauma, history of sexual abuse, or prior obstetric or surgical events. She attained menarche at 13 years of age and reported regular menstrual cycles (28–30-day cycle length, 4–5 days of flow) without dysmenorrhea. Secondary sexual characteristics were appropriate for age and normally developed. On local genital examination, complete midline fusion of the labia minora was noted, entirely obscuring the urethral meatus, clitoris, and hymenal opening (Figure 1). A minute dimple was identified in the upper one-third of the fused labial surface. No features of lichen sclerosus, genital dermatosis, or scarring were observed on the surrounding skin.



Figure 1: Preoperative complete midline fusion of the labia minora.

Routine hematological and biochemical investigations including complete blood count, hepatic and renal function tests, fasting blood glucose, serum estradiol, follicle-stimulating hormone (FSH), luteinizing hormone (LH), thyroid-stimulating hormone (TSH), and serum prolactin were all within normal limits. Urine microscopy revealed pyuria, and urine culture grew *Escherichia coli* sensitive to nitrofurantoin. Magnetic resonance imaging (MRI) of the pelvis demonstrated a normal-sized anteverted uterus, bilateral normal ovaries, a normal vaginal canal with minimal fluid collection, and no upper urinary tract dilatation.

Surgical management

Informed written consent was obtained. The procedure was performed under regional anesthesia (spinal) with the patient in the dorsal lithotomy position. Following sterile

preparation and draping of the perineum, the minute epithelial dimple in the upper one-third of the fused labia was identified as the point of least resistance. A mosquito artery forceps was gently introduced through this residual opening, which served as a safe entry point into the plane between the fused labial surfaces. Controlled blunt and sharp adhesiolysis was performed, progressing from superior to inferior along the midline avascular plane, with care taken to minimize the risk of injury to the underlying urethra and clitoris superiorly and the hymenal ring inferiorly. Complete separation of the fused labia was achieved, restoring normal vulvar anatomy and exposing the urethral meatus, clitoris, and intact hymenal opening (Figure 2).



Figure 2: Intraoperative complete separation of fused labia achieved.

A gentle digital vaginal examination was performed intraoperatively under anesthesia to confirm normal vaginal patency, adequate vaginal length, and absence of distal vaginal obstruction or congenital anomaly findings consistent with the preoperative MRI. Bladder catheterization (14 Fr Foley catheter) was performed to confirm urethral patency. Vulvar reconstruction was completed with interrupted 3-0 polyglactin 910 (Vicryl) sutures to re-approximate the cut labial edges and ensure epithelialized surfaces faced each other, thereby reducing the risk of re-adhesion (Figure 3). The estimated duration of surgery was 30 minutes, with minimal blood loss (<20 ml).



Figure 3: Postoperative vulvar reconstruction with interrupted 3-0 vicryl sutures.

Postoperative care

The postoperative period was uneventful. The urinary catheter was removed on the first postoperative day

following satisfactory spontaneous voiding. The patient was counselled regarding meticulous vulvar hygiene, regular sitz baths, use of a bland emollient (white soft paraffin) on the labial edges, and avoidance of local irritants. She was prescribed a short course of oral antibiotics based on the preoperative urine culture sensitivity.

The patient was reviewed at four weeks and six months postoperatively. Complete healing was noted at the four-week visit with no evidence of re-adhesion. At six months, the vulvar anatomy remained normal without recurrence of adhesion. Following marriage, the patient reported satisfactory sexual function without dyspareunia.

Table 1: Clinical timeline

Timeline	Clinical event
Presentation	Dysuria, recurrent UTI, vulvar pruritus (1-year duration)
Examination	Complete labial fusion with minute residual epithelial opening
Investigations	Normal hormonal profile; positive urine culture (<i>E. coli</i>); MRI: normal pelvic anatomy
Surgery	Adhesiolysis under regional anesthesia; vulvar reconstruction
4 weeks	Complete wound healing; no re-adhesion
6 months	No recurrence; satisfactory sexual function post-marriage

DISCUSSION

Epidemiology

Labial adhesion is most frequently encountered in prepubertal girls (prevalence 0.6–3.3%) and postmenopausal women, in whom hypoestrogenism predisposes the opposing labial epithelial surfaces to agglutination following minor trauma or chronic low-grade inflammation.^{1,2} In contrast, the condition is exceedingly uncommon in women of reproductive age owing to the protective effect of adequate circulating estrogen on vulvar epithelial integrity. Consequently, when labial adhesion is identified in a reproductive-age woman, careful evaluation to identify underlying predisposing factors is warranted.

Etiology

Reported etiologies in reproductive-age women include postpartum genital trauma, lactational hypoestrogenism, chronic vulvovaginitis, diabetes mellitus, lichen sclerosus, cicatricial pemphigoid, female genital mutilation, prior genital surgery, and local inflammatory dermatoses.^{3–5} In our patient, however, no predisposing factor was identified despite detailed clinical evaluation, dermatological assessment, and comprehensive laboratory investigations

including normal serum estradiol levels. The adhesion was classified as acquired and idiopathic based on the following evidence: normal pubertal development and regular menstruation since menarche, indicating the condition was not congenital; MRI confirmation of normal Mullerian anatomy; and intraoperative findings of a fibrous adhesion plane rather than solid tissue, consistent with secondary epithelial fusion.

Clinical presentation

Clinical manifestations of labial adhesion depend on the extent of fusion and the degree of resultant urinary or genital tract obstruction. Adults commonly present with dysuria, urinary frequency, recurrent UTIs, urinary retention, post-void dribbling, dyspareunia, or difficulty with sexual intercourse.^{1,3} Complete fusion may occasionally mimic congenital genital tract anomalies on initial assessment. In our patient, recurrent UTIs and dysuria were the predominant presenting complaints. Notably, despite the apparently complete external labial fusion, a minute residual epithelial opening permitted ongoing menstrual drainage, thereby preventing cryptomenorrhea or hematocolpos an observation consistent with reports of functionally near-complete adhesions in the literature.^{1,7}

Differential diagnosis

The principal differential diagnoses in a reproductive-age woman presenting with an apparently absent vaginal introitus include imperforate hymen, distal vaginal atresia, and Mayer–Rokitansky–Kuster–Hauser (MRKH) syndrome.⁷ In our patient, imperforate hymen was excluded by the history of regular menstruation without cyclic abdominal pain and by the absence of a bulging perineal membrane. Vaginal atresia and MRKH syndrome were excluded by MRI demonstrating a normal uterus, cervix, and vaginal canal, and by intraoperative confirmation of normal vaginal patency following adhesiolysis. Urethral prolapse and ureterocele were also considered in view of the periurethral fullness noted on examination, but were excluded by normal urinary tract anatomy on imaging and intraoperative inspection.

Management

The choice of treatment depends on the patient's age, symptom severity, and the density and extent of adhesion. Topical estrogen cream remains the first-line treatment for thin labial adhesions in prepubertal girls, with reported success rates of 50–90%.^{2,6} However, in adult women with dense, fibrotic, and complete adhesions particularly those who are already estrogenized topical therapy alone is unlikely to be effective, and primary surgical adhesiolysis is recommended.^{1,5} In our patient, the complete and dense nature of the fusion, normal endogenous estrogen levels, and significant symptom burden (recurrent UTIs) justified direct surgical intervention without a trial of conservative management. The use of the residual epithelial opening as

a safe entry point allowed controlled separation while minimizing the risk of iatrogenic urethral injury.

Prevention of recurrence

Prevention of recurrence is an essential component of management. Reported strategies include application of topical estrogen or bland emollients to the healing labial edges, counseling on regular gentle labial separation during bathing, maintenance of vulvar hygiene, and

prompt treatment of vulvovaginal infections.^{2,5,6} In postmenopausal patients, ongoing topical estrogen is recommended; however, in a reproductive-age woman with normal circulating estrogen, the emphasis is on emollient use and hygiene measures. Our patient remained recurrence-free at six months, which may be attributable to her normal estrogen status, appropriate surgical

technique with re-epithelialization of the wound edges, and compliance with postoperative hygiene counseling.

Table 2: Comparison with previously published cases of labial adhesion in reproductive-age women.

Author	Age	Predisposing factor	Presentation	Treatment	Outcome
Avcioglu et al ⁵	Adult	Postpartum/Inflammatory	Dyspareunia	Surgical	No recurrence
Verma et al ³	Adult	Diabetes/Inflammation	Urinary symptoms	Surgical	Improved
Vatsa et al ¹	Reproductive age	Chronic inflammation	Fistula mimic	Surgical	Good outcome
Present case	26 years	None identified (Idiopathic)	Recurrent UTI, dysuria	Adhesiolysis	No recurrence at 6 months

Comparison with published literature

A review of previously published adult cases demonstrates that most reproductive-age women with labial adhesion have identifiable underlying etiologies such as postpartum trauma, inflammatory dermatoses, or hypoestrogenic states (Table 2). In contrast, our patient had none of these recognized predisposing factors and maintained normal menstruation through a minute residual epithelial opening.

This combination of complete external fusion, preserved menstrual function, absence of any identifiable etiology, and excellent postoperative outcome without recurrence distinguishes this case from previously reported cases and reinforces the importance of considering idiopathic labial adhesion in the differential diagnosis of urinary symptoms in reproductive-age women.

CONCLUSION

Complete acquired labial adhesion is an exceptionally rare condition in reproductive-age women. Although most adult cases are associated with identifiable predisposing factors, idiopathic cases can occur and should be considered in the differential diagnosis after congenital genital tract anomalies have been excluded. Persistent or recurrent urinary symptoms in reproductive-age women warrant careful genital examination, as early recognition and appropriate surgical management can restore normal anatomy, alleviate symptoms, and prevent long-term urinary and sexual morbidity.

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