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Outcomes with the Use of Petroleum Jelly for Fused Labia in the Pediatric Age Group

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ABSTRACT

Background: Fused labia or labial adhesion has several management options including betamethasone cream, estrogen cream, manual separation, and surgery. **Objective:** To determine how applying petroleum jelly to patients with fused labia after physical separation affects their outcomes. **Study Design:** Descriptive Longitudinal study. **Settings:** Pediatric Surgery Department, Faisalabad Medical University, Faisalabad Pakistan. **Duration:** April 2025 to June 2025. **Methods:** 50 females of 1 month to 12 years who underwent manual separation were included. Exclusion criteria were precocious puberty, ambiguous genitalia, genitourinary tract or anorectal abnormalities, and prior use of betamethasone or local estrogen therapy. Parents were informed about local hygiene and application of petroleum jelly three times a day for six weeks, and follow-up was done at 1, 3, and 6 weeks. **Results:** Fifty females aged 1 month to 12 years with a mean age of 3.22 ± 2.15 years were included in the study. In total, parents' concern (48.0%) was found to be the most common presenting complaint, followed by cosmesis (15.0%) and recurrent UTI (22.0%). Degree II was the most prevalent severity degree (40.0%). Complete resolution was seen in 92.0% of patients at 1 week, in 94.0% at 3 weeks, and in 90.0% at 6 weeks. Out of the 50 cases, five (10.0%) experienced recurrence, and they resumed the same treatment. **Conclusion:** This study concluded that complete resolution of fused labia can be achieved with the use of petroleum jelly in the pediatric age group.

Keywords: Labial adhesions, Manual separation, Petroleum jelly.

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INTRODUCTION

The merging of the labia is known as fused labia or labial adhesion. The illness is referred to in the literature by various names, including labial adhesion, labial or vulval fusion, and labial agglutination. One of the most frequent reasons patients visit pediatric surgical clinics is fused labia.¹

In addition to causing symptoms such as urinary tract infections, urinary retention, changes in urinary stream or post-void dribbling of urine, pain with activity, itching, parental concerns, and cosmesis, it may also be discovered by accident. Although the precise etiology is yet unknown, hypoestrogenism and local vulva inflammation or irritation are thought to be to blame. To rule out other congenital abnormalities, such as an imperforate hymen, the clinical diagnosis of fused labia is made by observing a thin, translucent membrane covering the vulva.

In the literature, several management strategies have been put forth. Betamethasone cream, estrogen cream, manual separation, and surgery are frequently employed interventions. Local inflammation, erythema, folliculitis, pruritus, vesiculation, fine hair growth, skin atrophy, and Cushing syndrome have all been associated with betamethasone cream.³ Topical estrogen creams have also been widely used and linked to premature puberty, breast development, vaginal bleeding, and labia darkening. Parents' worries about cosmesis and those who appeared with problems and were either nonresponsive to topical treatments or recurred were manually separated.⁴ For those who did not respond to or experienced a repeat of the aforementioned options, surgical intervention and separation were reserved.

Because it provides instant symptom alleviation, parental satisfaction, and fewer hospital visits, manual separation is a common technique on pediatric surgery floors. After manual

separation, several topical creams are applied for four to six weeks.

However, the recurrence incidence was 6-8% following manual separation and with topical hormonal and antibiotic creams.⁵

The objective of my study is to determine how applying petroleum jelly to patients with fused labia after physical separation affects their outcomes.

METHODS

This descriptive Longitudinal study was conducted at the Department of Pediatric Surgery, Faisalabad Medical University, Faisalabad Pakistan. The duration of the study was 3 months from April 2025 to June 2025, the study was authorized by the pediatric surgery department's ethical review committee at Faisalabad Medical University vide letter No.48.ERC/FMU/2024. Before participating in the study, the parents provided their informed and comprehensive consent. Included were 50 female who had never had their case managed before (either by topical therapy or physical separation) when they arrived at the outpatient pediatric surgical clinic. The condition severity was categorized into four grades based on the length of the labial adhesion line (raphe): grade I was defined as having a raphe length of up to 25% of the length of the labia minora; grade II as having a raphe length of 25–50%; grade III as having a raphe length of 50–75%; and grade IV as having a raphe length of more than 75%. Patients with precocious puberty, ambiguous genitalia, other related genitourinary tract and anorectal abnormalities, and those who had previously received betamethasone or local estrogen therapies were not included.

Parents were advised to be mindful of the neighborhood's cleanliness. Following the treatment, parents were allowed to observe their daughters' normal genitalia in person. They were also instructed on how to apply petroleum jelly to the released labia site three times a day for six weeks, as well as about local hygiene practices, including sitz baths and regular showers. At the pediatric surgery outpatient clinic, patients were monitored.

The collected data were analyzed using SPSS 25.0 software. The Shapiro-Wilk test was used to assess the normality of the data. For quantitative data, the mean and standard deviation, or the median and interquartile range (IQR), were shown. For qualitative variables, percentages and frequencies were computed. When using the chi-square test, a p-value of less than 0.05 was deemed significant.

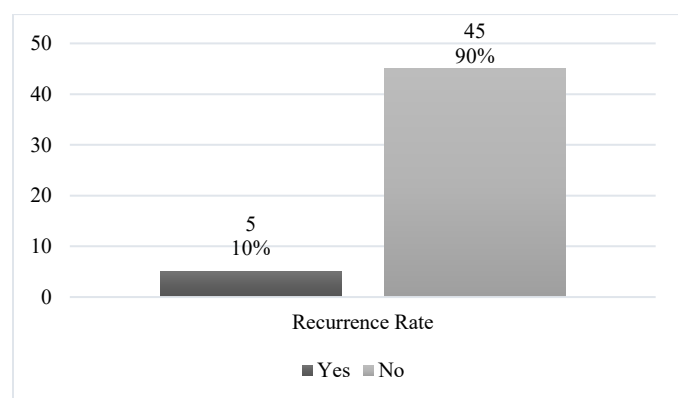
RESULTS

Fifty females aged 1 month to 12 years, with a mean age of 3.22 ± 2.15 years, were included in the study. In total, parents' concern (48.0%) was found to be the most common presenting complaint, followed by cosmesis (15.0%) and recurrent UTI (22.0%). Degree II was the most prevalent severity degree (40.0%). Complete resolution was seen in 92.0% of patients at 1 week, in 94.0% at 3 weeks, and in 90.0% at 6 weeks. Out of the 50 cases, five (10.0%) experienced recurrence, and they resumed the same treatment (Figure I). Table 1 provides a summary of the findings.

Table 1: Summary of results (n=50)

Confounding variables		Frequency	%age
Age	1 month – 1 year	13	26.0
	1 year-6 years	31	62.0
	7 years-12 years	06	12.0
Presenting symptoms	Cosmesis	15	30.0
	Parental concern	24	48.0
	Recurrent UTI	11	22.0
Grade	I	08	16.0
	II	20	40.0
	III	16	32.0
	IV	06	12.0
Completely resolved at 1 week	Yes	46	92.0
	No	04	8.0
Completely resolved at 3 weeks	Yes	47	94.0
	No	03	6.0
Completely resolved at 6 weeks	Yes	45	90.0
	No	05	10.0

Figure I: Recurrence rate (n=50)



DISCUSSION

Although labial adhesion is not an uncommon problem, it is rarely identified in children who do not exhibit any symptoms⁶. According to Schroeder, the condition's high incidence ranged from 21.3 to 38.9%. The primary causes of labial adhesion⁷ are thought to be prepubertal hypoestrogenism, recurrent inflammation, and inadequate local hygiene. These factors cause the surface epithelium to slough off and macrophages to become overactive, which results in the development of an avascular band between the labia minora.⁸ Topical betamethasone's function in treating labial adhesion cases stems from the pathophysiology of adhesion formation as well as its impact on treating male phimosis.⁹⁻¹¹

Despite its potential side effects, prolonged duration, and comparatively high recurrence rate, topical estrogen cream is generally acknowledged as a suitable therapeutic option. In contrast to Mayoglou *et al.*,¹² who reported a mean duration of 2.8 months for topical estrogen cream to achieve complete separation with a 71.2% success rate and a surgical separation requirement of 27.4%, our study found that the mean duration for complete separation was 3.77 months with an 88.0% success rate and a surgical separation requirement of 12.0%.

We regarded partial separation after six weeks as a failure, as there is limited information regarding potential systemic or

local side effects of long-term use of local betamethasone cream. Mayoglou *et al.*¹² reported a mean duration of topical betamethasone of five weeks, which is consistent with that.

Nonetheless, the study found no systemic or local betamethasone side effects, which is consistent with the findings of Myers *et al.*⁹ Wejde *et al.*¹³ found negative effects of local estrogen in 6% of cases, including vaginal irritation and breast enlargement, while Mayoglou and colleagues observed negative effects of local estrogen cream in 5% of cases, 3% in skin rash, and 0.7% in vaginal bleeding.¹¹

The parents find any physical or surgical intervention in the vaginal area completely unacceptable, even though surgical separation seems like an easy way to handle the disease. According to certain studies, the rate of postsurgical separation recurrence can approach 26%, particularly if topical treatment was not applied following the procedure and there was a chance that more robust adhesion would form after each manual separation trial.¹²

Wejde E. *et al.*¹³ reported an initial success rate of 97% following a month-long separation of labial adhesions, which is comparable to our study's 90.0% success rate. Wejde E *et al.*'s¹³ study had a small population (n=30), therefore our recurrence rate was 10.0%, but the same study's was 28%. After the second labial separation, we had a 100% success rate, although Wejde E reported a 70% success rate. Our study's initial high success rate is consistent with previous manual separation of labial adhesions studies by Sover T *et al.*,¹⁵ Eroglu E *et al.*,¹⁴ and Schober J *et al.*¹⁶

In a small study group, Watanabe T *et al.*¹⁷ reported a comparable high success rate following the second separation of 100%. Following surgery, those patients were given topical antibiotics, and as in our trial, cleanliness was maintained during follow-up.

In contrast to our study, which found a 91.20% initial success rate after one month of separation, Bussen S *et al.* found a 100% initial success rate. The success rate was 100% in our trial, but it was 96% after two months of follow-up.¹⁸ In their investigation of manual separation of labial adhesions, Watanabe *et al.* and Thibaud *et al.* found a much higher success rate than alternative treatment techniques.^{17,19} In their investigation, Bussen S. *et al.* concluded that the primary manual separation should be provided to address the issue in a single treatment sitting.¹⁸ The parents' lack of treatment continuity in our setting may be the cause of the topical treatment's failure. By using an antibiotic ointment for an extended period of time and maintaining proper hygiene in the affected area, recurrence can be prevented.¹³

By shielding the labia from local irritants due to its high viscosity, limiting inflammation and epithelial shedding, and ultimately preventing adhesion formation, local petroleum ointment (Vaseline) plays a significant role in treating labial adhesion. As a result, it raises the success rate and lowers the recurrence rate. Ertürk's¹⁴ investigation revealed the significance of using Vaseline in conjunction with local betamethasone, which is consistent with that finding.

CONCLUSION

This study concluded that completely resolved fused labia can be achieved with the use of petroleum jelly in the pediatric age group

LIMITATIONS

Single-center-based with a small sample size within in limited time period.

SUGGESTIONS / RECOMMENDATIONS

Further comprehensive studies/ research are recommended to appreciate how applying petroleum jelly to patients with fused labia after physical separation affects their outcomes.

CONFLICT OF INTEREST / DISCLOSURE

None to declare.

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