

Retrospective evaluation of labial fusion in girls

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ABSTRACT

Aim: The aim of this study was to determine the factors affecting fusion in girls treated for labial fusion retrospectively over a three-year period.

Material and Method: The research has a cross-sectional design. The research sample consists of girls with ICD10 code Q52.5 who were brought to the hospital with labial fusion symptoms in a three-year period (January 2018-December 2020). The data were obtained from the hospital information system. Variables that were effective in labial fusion recurrence were determined by Chi-Square analysis, and the marginal effects of effective variables on recurrence were analyzed by Poison Regression analysis.

Results: 52.9% of 308 cases were younger than one year old (mean age 4.36 ± 1.10 months). Symptom presentation is 10.4% in children younger than one year of age, and 84.83% in older. The most commonly presented symptoms are pain, burning, soiling of underwear, and bad odor during urination. Labial fusion recurrence is 14.1% in children younger than one year of age, and 62.8% in older. Manual opening was applied in all cases, and weekly follow-ups were performed with topical treatment. The Poison Regression analysis revealed that a history of allergy (1.31 times; $z:3.61$, $p:0.000$), winter (0.86 times; $z:3.22$, $p:0.001$), and diaper dermatitis (1.22 times; $z:5.19$, $p:0.000$) increased the number of labial fusion recurrence.

Conclusion: The findings of our study are similar to the literature in terms of factors causing labial fusion and treatment type. The recurrence rate was found to be higher in our study. It should be kept in mind that labial fusion is asymptomatic, especially in girls in the first year of life. Considering the possibility of recurrence of labial fusion, mothers and physicians examining the child should be aware of this issue.

Keywords: Labial fusion, labial adhesion, recurrence, manual opening, follow-up

INTRODUCTION

Labial fusion is the adhesion of the labia minora in the midline to cover the vaginal entrance and/or the urethral meatus, usually in girls between the ages of 3 months and 6 years (1). Labial fusion is reported in 0.6% to 5% of girls (1,2). Considering that the cases are asymptomatic and detected incidentally, the frequency of labial fusion may be higher (2).

In labial fusion, symptoms are associated with the pooling of urine behind the attached labia minora. Common symptoms are recurrent urinary tract infection, vulvovaginitis, activity-related perineal pain, post-void urine drip, and urinary retention resulting from complete adhesions of the labia minora (1,2). In girls presenting with these symptoms, physicians should keep in mind that there may be labial fusion, and the diagnosis can be easily made by careful physical examination (3,4).

There is no consensus on the etiology of labial fusion.

However, it has been suggested that microtrauma and reepithelialization of the labium minora skin, vulvar irritation and hypoestrogenism may have an effect on adhesion (2,5).

There are opinions that labial fusion heals spontaneously with the production of estrogen at puberty, and that the treatment should be applied only to patients with symptoms in the prepubertal period (1). In the treatment of labial fusion, only case follow-up can be performed, but there are also treatment options with manual removal of adhesions and surgical intervention. The recommendation of gynecologists regarding the treatment of labial fusion cases is the use of estrogen-containing creams and follow-up (5).

Due to the increase in maternal observations and anxiety about adhesions in the labia minora, there has been a significant increase in the number of visits to the

outpatient clinic compared to previous years. For this reason alone, more clinical attention should be given to the issue of labial fusion and requires a more detailed analysis of factors related to prevention.

The aim of this study was to determine the factors affecting fusion in girls treated for labial fusion retrospectively over a three-year period.

MATERIAL AND METHOD

The study was initiated approval by the Clinical Researches Ethics Committee of the Balıkesir University Medical Faculty (Date: 24.11.2021, Decision No: 2021/257). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

The research has a cross-sectional design. The research sample consists of girls with ICD10 code Q52.5 who were brought to the hospital with labial fusion symptoms in a three-year period (January 2018-December 2020). The data were obtained from the hospital information system. For a three-year period, 308 patients with ICD10 Q52.5 code were identified in the hospital information system.

Data from the hospital information system were grouped (Group 1 and Group 2) by age, based on clinical observations of the abundant detection of labial fusion despite the absence of any symptoms in patients under one year of age. In Group 1, where asymptomatic but labial fusion cases were common, families were interviewed by telephone and a questionnaire was applied to determine the factors affecting labial fusion. In the questionnaire, such as patient's age, weight, allergy history, previous infection history, history of labial fusion in sibling, breastfeeding, frequency of diaper dermatitis, use of perineal cleaning products, adhesion season, labial fusion symptoms, number of hospital admission and treatment type variables were questioned.

In the obstetrics and gynecology literature, treatment with estrogen-containing creams is emphasized in labial fusion (6,7). Differently, treatments with estrogen-containing creams are not recommended in pediatric surgery due to side effects detected in infants or children (6,8-11). According to the treatment protocol applied in our clinic for patients presenting with labial fusion symptoms, manual opening is applied in all patients after the approval of the family in the first stage. In some cases, local anesthesia is applied with EMLA® 5% cream before manual opening. In many cases, the fusion can be easily opened manually without the need for this. In manual opening, the labia majora is gently pulled laterally to open the labia minora at the level of the commissura posterior. After manual opening, it is recommended to use epithelial cream (Fucidin 2% cream) and the patient

is followed up on a weekly basis. In case of recurrence of labial fusion, manual opening is performed again and it is recommended to use 1% Betnovate cream during the follow-up. The recurrence of labial fusion is followed on a weekly basis. Patient follow-up ends with the disappearance of labial fusion and the family is informed about recurrence.

Statistical Analysis

In the analysis of the data, descriptive statistics were calculated. Variables that were effective in labial fusion recurrence (the number of hospital re-admissions with the same symptom) were determined by Chi-Square analysis, and the marginal effects of effective variables on recurrence were analyzed by Poisson Regression analysis. SPSS statistical package (version:23) and Gretl program were used in data analysis.

RESULTS

When the hospital information system was filtered for the three-year research period, 308 patients with ICD10-Q52.5 code (labial fusion) were accessed. When grouped by age, 52.9% (n: 163) of the patients reached were under one year old (Group 1), and 47.1% (n: 145) were over one year old (Group 2).

The mean age of Group1 was 4.36 ± 1.10 months, and only 10.4% (n:17) of these patients admitted to the hospital with labial fusion symptoms. It is noteworthy that labial fusion occurs without symptoms in this group of patients. The labial fusion recurrence rate in this group of patients is 14.1% (n:23) (Table 1).

	Group 1	Group 2
Number	163 (52.9%)	145 (47.1%)
Mean age	4.36 ± 1.10 months	2 ± 1.44 years
Symptom rate (%)	17/163 (10.4%)	123/145 (84.83%)
Recurrence rate (%)	23/163 (14.1%)	91/145 (62.8%)

The mean age of Group 2 was 2 ± 1.44 years, 84.8% (n:123) of these patients admitted to the hospital with complaints such as pain, dysuria, staining on their underwear, and bad odor during urination. 22.06% (n:32) of these patients were diagnosed with the attention of their mothers or the examination of physicians. Despite treatment, labial fusion recurred in 62.75% (n:91) of this group of patients.

In Group 1, families were interviewed by telephone and a questionnaire was applied to determine the factors affecting labial fusion. The families of 37 patients (22.69%) were contacted by phone and a questionnaire was applied. These patients admitted to the hospital 2.78 times due to labial fusion. 38% of the patients have a history of allergy and the frequency of diaper dermatitis is 3.1 times higher. It was determined that all patients were

fed with breast milk and their perineum was cleaned with wet wipes. None of the patients had a history of urinary tract infection. Labial fusion occurred in 75.70% of patients during the winter months, and all patients were treated with manual opening.

Patients were admitted to the hospital an average of 2.78 ± 0.82 (median:3) times with symptoms related to labial fusion. As a result of chi-square analysis, variables (diaper dermatitis, age, weight, allergy history, season) were found to be effective in labial fusion recurrence (Chi-square: 36.99, $p:0.0000$). The marginal effects of these variables on recurrence were calculated by Poisson Regression analysis (**Table 2**). The analysis revealed that a history of allergy (1.31 times; $z:3.61$, $p:0.000$), winter (0.86 times; $z:3.22$, $p:0.001$), and diaper dermatitis (1.22 times; $z:5.19$, $p:0.000$) increased the number of labial fusion recurrence. The weight of the patients is not effective in the emergence of labial fusion. The age variable differed in the regression analysis. In other words, as the age of the patients increases, the labial fusion decreases and accordingly the admittance to the hospital decreases.

Variables	Coefficient (Marginal effect)	Std. Error	z	p-value
Diaper dermatitis	1.221158	.2353893	5.19	0.000
Allergy history	1.307848	.3622907	3.61	0.000
Season (winter)	.8639268	.2684333	3.22	0.001
Weight	-.4480946	.451941	-0.99	0.321
Age	-.1217027	.0575402	-2.12	0.034

DISCUSSION

In this study, factors affecting patients treated for labial fusion were investigated retrospectively for a three-year period. Labial fusion is a clinical condition seen in the postnatal period (8). Although the etiology is not certain, it is widely believed that allergens, materials used in perineal cleaning and mechanical friction facilitate labial fusion, and urine pooling behind adherent labia is the cause of the symptoms (2). It has been reported that inflammation due to infection or trauma causes erosion and fusion in the epithelium of the labia minora (9,12). Bacon states that the most common reason for recurrence of labial fusion is dermatitis, and the history of allergy (38%) and the winter season (24%) facilitate recurrence (12). Wejde (13) emphasized that perineal ammonia dermatitis causes local inflammation and recurrence of labial fusion. Factors such as late changing of the baby's diaper, diarrhea, allergy and atopic nature, change in stool composition due to transition to complementary foods, zinc deficiency, antibiotic use, materials used in perineal cleaning are effective on perineal dermatitis (13). Similar to the literature, in our study, history of allergy, winter season and diaper dermatitis were effective on labial fusion.

In the literature, recurrence is reported in 7-55% of labial fusion cases (5,6). In our study, the recurrence rate (14-62%) was higher in girls older than one year.

There are different methods in the treatment of labial fusion. Acer (14) stated that labial fusion should be opened in symptomatic cases, but there is no consensus in asymptomatic cases. It has been reported that topical treatment should be the first choice treatment, but treatment failure is also high (6,9). Bacon (12) reported that with the onset of endogenous estrogen production with the adolescence period, the problem will resolve spontaneously and 0.05% betamethasone cream will be sufficient for treatment. Myers (9) states that follow-up with steroid cream is not sufficient and manual opening is necessary for labial fusion treatment. The most common treatment method is manual opening. A cotton papix or feeding tube can also be used to manually open the labial fusion (2,6). Repeated manual or surgical opening may cause labial fibrosis (9). In our study, in accordance with the literature, manual opening was applied in all cases and epithelializing and steroid creams were used gradually in the follow-up of the case. Estrogen-containing creams were not used in any of the cases in our study. Our cases were followed up on a weekly basis until there was no labial adhesions. No labial fibrosis was detected in the follow-ups.

Recurrence of labial fusion is a notable issue (15). Poor perineal hygiene, dermatitis, allergies and sexual abuse are reported as effective variables on recurrence (16-19). Kumetz (20), on the other hand, stated that the frequency of dermatitis, the duration of breastfeeding and the presence of infection were not associated with recurrence of labial fusion. According to Melek et al. (19) recommends medical treatment in recurrent or persistent labial fusion. Berkowitz (21) reports that treatment for relapse with topical estrogen is successful in 35%. In our study, similar to the literature, labial fusion recurrence was quite high and therefore the number of admissions to the hospital was high. Manual opening and topical therapy were used in the treatment of recurrences.

Although the study data are sufficient to determine the factors affecting labial fusion, the hospital-based data can be considered as a limitation of our study.

CONCLUSION

Our study findings have shown that labial fusion can be symptomatic or non-symptomatic. It should be kept in mind that labial fusion is asymptomatic, especially in girls in the first year of life. Considering the possibility of recurrence of labial fusion, mothers and physicians examining the child should be aware of this issue. Mothers should be informed about perineal hygiene, allergies, diaper dermatitis and the effect of changing

diapers frequently. Physicians, on the other hand, should carefully examine each case, be able to manually open the labial fusion when detected, and carefully investigate recurrent urinary tract infections by considering the possibility of labial fusion.

In the future study, it is aimed to inform family physicians about labial fusion, to detect labial fusion in girls early, and to inform mothers about preventing adhesions.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was initiated approval by the Clinical Researches Ethics Committee of the Balikesir University Medical Faculty (Date: 24.11.2021, Decision No: 2021/257).

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