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APPROACHES TO LABIAL FUSION: 3 YEARS EXPERIENCE OF A TRAINING AND RESEARCH HOSPITAL IN THE BLACK SEA REGION

LABİYAL FÜZYONA YAKLAŞIMLAR: KARADENİZ BÖLGESİNDE BİR EĞİTİM VE ARAŞTIRMA HASTANESİNİN 3 YILLIK DENEYİMİ

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Abstract / Özet

Objective: Labial fusion is a prevalent pediatric gynecological condition. This study aimed to conduct a retrospective analysis of patients diagnosed with labial fusion and treated in the Pediatric Surgery department of a tertiary hospital. The primary focus was on evaluating the topical and interventional modalities employed in the treatment of labial fusion and assessing the rates of recurrence. **Materials and Methods:** A retrospective evaluation was conducted on 520 patients treated for labial fusion at the Pediatric Surgery Clinic of Samsun Training and Research Hospital between January 1, 2020, and January 1, 2023. The investigation encompassed an analysis of patients' ages at the time of diagnosis, presenting symptoms, the application of topical, surgical, and combined therapeutic strategies, and the post-treatment recurrence rates of labial fusion. **Results:** Labial fusion was diagnosed in 520 patients, with ages ranging from 1 to 148 months and a mean age of 17.05±19.56 months. While a considerable proportion of patients were asymptomatic, symptomatic cases manifested urinary and vaginal symptoms. Initial treatment involved the application of topical agents to all patients. Notably, many cases referred to pediatric surgery clinics had previously undergone unsuccessful topical treatments administered by pediatricians at different medical institutions, prompting subsequent referral for manual separation. Success was achieved in 128 patients with topical treatment (98 estrogen, 30 betamethasone). Interventional procedures were performed on 392 patients, with an additional two weeks of topical treatment following the intervention for all relevant groups. Among the 95 patients undergoing manual separation, 1-5 recurrences were observed, while no recurrences were noted with repeated combined treatment. Statistically, higher labial fusion recurrence rates were identified in older age groups. **Conclusion:** In the management of labial fusion, we advocate for the importance of employing topical estrogen or betamethasone as non-invasive and secure treatment modalities. Considering the potential risks associated with prolonged topical therapy, manual or surgical separation is contemplated for patients exhibiting inadequate response to a two-week treatment course. Furthermore, we underscore the imperative for additional research to assess the long-term success of pre-pubertal labial adhesions and highlight the efficacy of post-surgical topical treatment as a prophylactic measure. **Keywords:** Labial fusion, topical estrogen, topical betamethasone, manual separation

Amaç : Labial füzyon çocukluk çağında sık görülen bir jinekolojik sorundur. Bu araştırmada üçüncü basamak bir hastanenin Çocuk Cerrahisi bölümünde labial füzyon tanısı ile takip ve tedavisi yapılmış olan hastaların retrospektif olarak incelenmesi, labial füzyon tedavisinde topikal ve girişimsel yaklaşımlarımızın ve nüks sayılarımızın değerlendirilmesi amaçlandı. **Materyal ve Metot :** Samsun Eğitim ve Araştırma Hastanesi Çocuk Cerrahisi Polikliniğinde 1 Ocak 2020-1 Ocak 2023 tarihleri arasında labial füzyon tanısı ile tedavi edilen toplam 520 hasta retrospektif olarak değerlendirildi. Hastaların tanı anındaki yaşları, şikayetleri, uygulanan topikal, cerrahi ve kombine tedavi yöntemleri, tedavi sonrası labial füzyon nüks oranları incelendi. **Bulgular:** Labial füzyon 520 hastada tespit edildi. Hastaların yaşı 1-148 ay olup ortalama 17,05±19,56 ay bulundu. Hastalar sıklıkla asemptomatikti, semptomatik olanlarda üriner ve vajinal semptomlarla karşılaşıldı. Tüm hastalara ilk olarak topikal tedavi uygulandı. Çocuk cerrahisi polikliniklerine başvuran labial füzyonlu olguların çoğunluğu, çeşitli hastanelerdeki çocuk hastalıkları uzmanlarınca topical tedavi denenmiş ve başarısız bulunması nedeniyle manuel seperasyon için yönlendirilmiş olgulardı. Topikal tedavi ile 128 hastada başarı sağlandı (98 östrojen, 30 betametazon). Girişimsel müdahale 392 hastaya yapıldı. Girişimsel tedavi uygulanan tüm gruplara, müdahalenin peşine 2 hafta topikal tedavi eklendi. Manuel seperasyon uygulanan 95 hastada 1-5 kez nüks görülürken, tekrarlanan kombine tedavi ile nüks gözlenmedi. İstatistiksel olarak labial füzyon nüks oranlarımız, ileri yaşlarda daha yüksek bulundu. **Sonuç:** Labial yapışıklığın tedavisinde, non-invaziv ve güvenli bir tercih olarak topikal östrojen veya betametazon uygulamasının önemine inanıyoruz. Uzun süreli topikal tedavi kullanımının potansiyel risklere işaret etmesi nedeniyle, 2 haftalık tedaviye yanıt vermeyen hastalarda manuel veya cerrahi ayrımı düşünüyoruz. Pre-pubertal labial yapışıklıkların uzun vadeli başarısının değerlendirilmesi için daha fazla araştırmaya ihtiyaç olduğunu düşünüyoruz ve cerrahi ayrım sonrasında topikal tedavinin profilaksi olarak etkili olduğunu vurguluyoruz. **Anahtar kelimeler:** Labial füzyon, topikal östrojen, topikal betametazon, manuel seperasyon

1. INTRODUCTION

Labial fusion represents a prevalent and acquired gynecological issue in the pediatric population, characterized by either partial or complete adhesion of the labia minora. Alternate terminologies for this condition encompass vulvae fusion, atresia of the vulva, synechia of the vulva, occlusion of the vestibule, atresia vulvae superficialis, adhesion of the labia minora, and agglutination of the labia minora. The incidence of this condition in prepubertal girls ranges from 0.6% to 3%, with the most frequently affected age group falling within 13-23 months.

The precise etiology of labial fusion remains elusive. In the neonatal period, there is a swift decline in estrogen levels shortly after birth, concomitant with the cessation of maternal circulation. The enduring effects of estrogen on vulvar tissues are postulated to persist, particularly until the age of three. It is hypothesized that the normal labial anatomy may undergo adhesion during the period of maternal estrogen withdrawal (1,2,3).

Labial fusion generally manifests without symptoms. However, symptomatic cases may present with chronic irritation, urinary or vaginal infections, urinary retention, perivaginal itching and inflammation, urine dribbling, or incontinence. The primary treatment modality for labial fusion typically entails the application of estrogen creams, administered twice daily. An alternative topical intervention includes betamethasone. In instances where topical treatments prove ineffective, manual separation or surgical intervention under local or general anesthesia is implemented (3,4).

The objective of this study was to scrutinize the topical and surgical methodologies employed in patients diagnosed with labial fusion and evaluate the recurrence rates.

2. MATERIALS AND METHODS

This study was conducted with the approval of the Samsun University Clinical Research Ethics Committee (Protocol no: SÜKAEK-2023 8/6, decision date: 26/4/2023), adhering to ethical principles and the guidelines outlined in the Helsinki Declaration.

A retrospective evaluation was carried out on a cohort of 520 patients diagnosed with labial fusion and treated at the of Samsun Training and Research Hospital Hospital Pediatric Surgery Clinic between January 1, 2020, and January 1, 2023. The analysis included an examination of patients' age at the time of diagnosis, presenting complaints, employed topical, surgical, and combined treatment modalities, and the post-treatment recurrence rates of labial fusion.

Throughout this process, patients underwent the following protocol steps. Parents were apprised of the chosen treatment method. Initial intervention involved the application of topical treatment. In cases where topical measures proved ineffective, manual separation was instituted, and for cases with robust adhesions, surgical separation was performed. Separation procedures were conducted under local anesthesia with EMLA cream, although in specific adhesion types, operating room conditions and sedation anesthesia were preferred. Subsequent to the operation, during the follow-up period, gentle traction and warm baths, accompanied by the application of topical estrogen or betamethasone cream twice a day, were recommended for two weeks.

Statistical analyses were executed utilizing SPSS 17.0. Descriptive statistics were employed, expressing numeric variables such as age as mean±standard deviation, while categorical variables were articulated as percentages (%). The Shapiro-Wilk test determined the normal distribution of numeric variables. For variables exhibiting a normal distribution, the ANOVA test analyzed mean values. The distribution of age among groups was assessed through frequency analysis. The Chi-square test was applied to evaluate age distribution among groups. The correlation between recurrences and age was assessed utilizing the Pearson correlation test.

3. RESULTS

Over the course of our three-year study, we conducted a retrospective examination of a cohort consisting of 520 patients diagnosed with labial fusion. The age spectrum within the patient population ranged from the youngest at 1 month to the oldest at 148 months, with an average age of 17.05±19.56 months. Predominantly, urinary symptoms were observed, while additional symptoms such as vaginal itching and discomfort were also documented. Initial therapeutic measures involved the application of topical treatment to all patients. Successful outcomes with topical treatment were realized in 128 patients, utilizing either estrogen (98 cases) or betamethasone (30 cases). Interventional procedures were undertaken in 392 patients, performed under local anesthesia with Emla cream; however, in 6 cases, sedation anesthesia was required under operating room conditions.

Following the separation procedures, all groups received topical treatment for a duration of two weeks, and combined treatment was administered to those undergoing interventional procedures. Among the 95 patients subjected to manual separation, recurrences were observed 1-5 times, while no recurrences were noted with repeated combined treatment. In the subset of four patients where separation was conducted under operating room conditions, recurrences occurred, and successful outcomes were achieved through postoperative combined treatment.

Table 1: Ages and topical treatment groups are shown below.

Treatment Groups	N	Mean ± Std. Deviation*	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
				Lower Bound	Upper Bound		
Estradiol	98	6,3878 ± 5,04543	,50967	5,3762	7,3993	1,00	26,00
Betametazon	30	7,0667 ± 5,44523	,99416	5,0334	9,1000	1,00	21,00
Separation	392	20,4847 ± 21,25571	1,07358	18,3740	22,5954	1,00	148,00

*Values expressed as a month

Table 2: The distribution of treatment groups according to age range are illustrated in table B.

		Group			Total
		Estradiol	Betametazon	Separation	
Age range	**0-1**	88[a]	25[a]	189[b]	302
	1-5	10[a]	5[a]	186[b]	201
	>5	0[a]	0[a]	17[a]	17
Total		98	30	392	520

The Pearson Correlation test revealed a statistically significant association, indicating a higher recurrence rate of labial fusion in older cases (p=0.021<0.05). The correlation between recurrences and age is further elucidated in Table C.

Table 3. The correlation of recurrences with age is shown in table C.

		Recurrences	Age
Recurrences	**Pearson Correlation**	1	0,101*
	Sig. (2-tailed)		0,021
	N	520	520
Age	**Pearson Correlation**	0,101*	1
	Sig. (2-tailed)	0,021	
	N	520	520

Table A details the patient ages and topical treatment groups, whereas Table B illustrates the distribution of treatment groups categorized by age range

4. DISCUSSION

Labial fusion is a prevalent pediatric gynecological disorder, and the literature presents various approaches to its treatment. The prevailing belief is that the increased estrogen levels at the onset of adolescence lead to the spontaneous resolution of labial fusion. Consequently, some studies propose a watchful waiting approach in asymptomatic cases. However, in our study, an examination of recurrence rates following intervention revealed a higher recurrence in older cases, suggesting a more resilient recovery process. Consequently, we contend that solely associating labial fusion with estrogen levels may be inadequate. Other studies in the literature advocate for treatment, as labial fusion may induce symptoms and complications such as dysuria, local inflammation in the labial region, urinary tract infection, and obstruction (4). Our clinical protocol involves treating every case of labial fusion presenting to our clinic. The initial treatment typically commences with estrogen (traditionally) or betamethasone creams, administered twice daily with gentle traction. Success rates with estrogen cream application range between 50% and 88% in the literature (3). Most patients continue using estrogen creams until complete resolution of adhesions. In addition to physician recommendations, we frequently encounter parents who, at their discretion, apply creams such as care cream in our clinics. In cases referred to pediatric surgery clinics due to the ineffectiveness of treatments received at various pediatric clinics, irregular and repeated use of estrogen cream is more prevalent. This circumstance has resulted in a higher number of patients undergoing manual separation in our study. As our study is retrospective, the limited knowledge about the use of estrogen or other topical creams before referral is a study limitation. Extended exposure to estrogen poses potential dangers due to insufficient knowledge of potential adverse effects during this process. There is no consensus on the duration of treatment with topical estrogen therapy. Öztorun et al., with 16 years of experience, applied treatment for 15 days in 889 patients (5). Sanfilippo reported that one week of treatment was effective in more than 90% of cases (6). Opipari suggested a treatment duration of 4 to 12 weeks with topical estrogen (7). While topical estrogen is generally considered a safe treatment for labial fusion, long-term use can lead to undesirable side effects such as breast bud, labial growth, hyperpigmentation, and early puberty (8). To mitigate unwanted side effects associated with estrogen creams, betamethasone can be employed as an alternative topical treatment (3). In a retrospective comparative study by Mayoglou et al., comparing topical estrogen and betamethasone treatment, it was suggested that betamethasone might expedite the separation of labial fusion compared to topical estrogen treatment, resulting in fewer recurrences and fewer side effects (9). However, no significant difference was determined between the estrogen and betamethasone treatment groups in this study. In a study by Eroğlu et al., which examined 131 children with labial fusion, it was found that topical estrogen and betamethasone creams had similar success rates, yielding limited satisfactory results. Although combined treatment is considered slightly more effective than single

treatments, it did not reach statistical significance (11). Future studies with larger patient cohorts will significantly contribute to refining the treatment protocol.

Long-term risks associated with topical estrogen or betamethasone treatment, such as adrenal suppression and cancer, remain unknown (9). In instances where we completed the recognized safe treatment duration of a 2-week topical regimen without achieving regression, we opted for manual separation. Soyer et al. advocated the use of topical estrogens as prophylaxis to prevent recurrences following manual separation in cases of labial adhesions, achieving a 100% success rate with this approach (12). Following manual separation in our clinic, a 2-week topical cream prophylaxis was introduced to mitigate recurrences, coupled with combined treatment. Consequently, complete remission was attained in all patients with labial fusion.

A meticulous examination of the vulva is imperative for diagnosing labial fusion. The fused labial area may manifest as a thin, transparent tissue film at the center or encompass thick, resilient, fibrous adhesions. In 90% of cases, labial adhesions extend the full length of the labia minora (13). Among 392 patients, six presented with notably tight, fibrous adhesions. Recurrences were observed in four of these cases, prompting separation under operating room conditions. While not all contributing factors are known, literature suggests that factors associated with recurrence may encompass poor hygiene, diaper rash, trauma, recurrent infections, or dermatological disorders (10). Thus, we underscore the significance of prophylactic topical treatment post-intervention and integrate it into our clinical practice.

5. CONCLUSION

Our conviction persists in favoring the initial application of topical estrogen or betamethasone as a non-invasive and secure method in the treatment of labial fusion. Underlining the potential adverse effects associated with prolonged use, we emphasize that topical treatments may entail precarious circumstances. Furthermore, we draw attention to the consideration of manual separation or surgical intervention for patients with labial fusion who show no response to a 2-week topical treatment. We contend that further investigation is imperative to assess the long-term efficacy of pre-pubertal labial adhesions. Additionally, we stress that labial fusion, post-surgical separation, can be effectively addressed by incorporating topical treatment prophylaxis.

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6. REFERENCES

1. Omar HA: Management of labial adhesions in prepubertal girls. J Pediatr Adolesc Gynecol 2000 November; 13(4):183-5.

2. Bacon JL: Prepubertal labial adhesions: evaluation of a referral population. Am J Obstet Gynecol. 2002 Aug; 187(2):327-31;discussion 332.

3. Myers JB, Sorensen CM, Wisner BP, Furness PD, Passamaneck M, Koyle MA. Betamethasone cream for the treatment of pre-pubertal labial adhesions. J Pediatr Adolesc Gynecol. 2006 Dec; 19(6):407-11.

4. Tebruegge M, Misra I, Nerminathan V. Is the topical application of oestrogen cream an effective intervention in girls suffering from labial adhesions? Arch Dis Child. 2007 Mar;92(3):268-71.

5. Öztorun Cİ, Erten EE, Bostancı SA, Demirkaya Ş, Ertürk A, Demir S,Güney D, Keskin G, Azılı MN, Şenel E. Approach to Labial Fusion in Children: 16 Years of Experience. Pediatr Pract Res. 2022 March 15; 10(1):1-5.

6. Sanfilippo JS. Labial adhesions. In: Behrman RE, Kliegman RM, Jenson HB, eds. Nelson Textbook of Pediatrics, ed. 16. Philadelphia: Saunders; 2004:1829-1830.

7. Opipari Jr AW. Management quandary. Labial agglutination in a teenager. J Pediatr Adolesc Gynecol. 2003 Feb; 16(1):61-2.

8. Layne M. Kumetz, MD, Elisabeth H. Quint, MD, Senait Fisseha, MD, JD, and Yolanda R. Smith, MD, MS. Estrogen Treatment Success in Recurrent and Persistent Labial Agglutination. J Pediatr Adolesc Gynecol. 2006 Dec;19(6):381-4.

9. Mayoglou L, Dulabon L, Martin Alguacil N, et al. Success of treatment modalities for labial fusion: a retrospective evaluation of topical and surgical treatments. J Pediatr Adolesc Gynecol 2009 Aug;22(4):247-50.

10. Bacon JL, Romano ME, Quint EH. Clinical recommendation: labial adhesions. J Pediatr Adolesc Gynecol. 2015 Oct;28(5):405-9.

11. Eroglu E, Yip M, Oktar T, Kayiran SM, Mocan H. How should we treat prepubertal labial adhesions? Retrospective comparison of topical treatments: Estrogen only, betamethasone only and combination estrogen and betamethasone. J Pediatr Adolesc Gynecol. 2011 Dec;24(6):389-91.

12. Soyer T. Topical estrogen therapy in labial adhesions in children: therapeutic or prophylactic? J Pediatr Adolesc Gynecol. 2007 Aug;20(4):241-4.

13. Nurzia MJ, Eickhorst KM, Ankem MK, et al. The surgical treatment of labial adhesions in pre-pubertal girls. J Pediatr Adolesc Gynecol 2003 March; 16(1):21-3.