

Pre-pubertal labial adhesion surgery: The first study to compare manual or surgical separation

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Abstract

Aim: Labial adhesion (LA) is one of the most common causes of admission to the pediatric surgery outpatient clinic among the prepubertal girls. There is no consensus on the best interventional technique (manual or surgical separation) for LA. The aim of this study is to compare the results of the manual and surgical separation of LA, and to decide which one is superior.

Material and Methods: We reviewed the medical records of sixty-six patients with LA operated between July 2016 and Mart 2018 by the same surgeon. The patients were divided into two groups: patients treated with a manual separation technique (group 1) and with a surgical separation technique (group 2). Patients were evaluated regarding age at presentation, referral indication, symptoms, surgical technique, recurrence and time of recurrence.

Results: There were 27 cases in Group 1 and 39 cases in Group 2. There were 14 recurrences in Group 1 (51.8%) and 5 recurrences in Group 2 (12.8%). The recurrence rate was significantly higher in Group 1. This difference between groups was statistically significant ($p=0.0006$). The relative risk for recurrence in Group 1 was found to be 4.0444 (OR 7.3231; $p=0.0012$), and 0.2473 in Group 2 with a significance level of $p=0.0022$.

Conclusion: The treatment of labial adhesion with the surgical separation technique is superior to manual separation in terms of the possibility of recurrence. Additional prospective studies are still needed to strengthen these data.

Keywords: Labial Agglutination; Labial Fusion; Manual Separation; Surgical Separation; Synechia Vulvae.

INTRODUCTION

Labial adhesion (LA) usually defined as a fusion of the labia minora in the midline. Labial adhesion is also known as a labial agglutination or synechia vulvae. It is one of the most common causes of admission to the pediatric surgery outpatient clinic among the prepubertal girls (1). LA is not present at birth. They are thought to develop in the period of re-epithelialization of the micro-traumatized and non-estrogenized labial skin (2).

Diagnosis is made by inspecting the vulva. The degree of adhesions can range from complete to partial closure of the labia minora. If fusion is complete there is generally tiny or pinpoint opening on the fusion allowed urine outflow.

Blockage of the free flow of urine may predispose to different symptoms, such as post-void dribbling, strain, and restlessness during urination, and recurrent urinary tract

infection. But labial adhesions are usually asymptomatic and are detected incidentally by a meticulous pediatrician. Since they are usually asymptomatic, follow-up is sufficient. Medical and/or surgical options are available if treatment is indicated.

There is no consensus on the best interventional technique for LA. However, the common approach is to choose the technique that is psychologically less affecting a child and his family and has a low recurrence rate. The aim of this retrospective study is to detect the best interventional technique for labial adhesion by comparing the results of the manual and surgical separation.

MATERIAL and METHODS

We reviewed the medical records of sixty-six patients with LA operated between July 2016 and Mart 2018 by the same surgeon. The cases were evaluated regarding age at presentation, referral indication, symptoms, surgical technique, recurrence and time of recurrence.

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The indications for treatment of labial adhesions defined as;

- Symptoms (recurrent urinary tract infection with no other cause, strain during urination, post-voiding dribbling)

The indications for surgical treatment of labial adhesions defined as;

- Adhesions for which medical therapy has failed,
- Adhesion that appears thick without a visible transparent raphe and accompanied by symptoms,
- Unconvinced concern of parents who want the child to recover from the "abnormal" external genitalia view as soon as possible.

In our practice, when a therapy is appropriate, a topical Betamethasone ointment preparation remains the first-line medical treatment. At the end of the third week of the ointment treatment, the patient is called back to the control and the reexamination is made. If there is evidence of improvement, the ointment treatment extends to the fifth week. If there is no sign of improvement at the end of the third week, the ointment therapy is stopped and a surgical treatment is recommended. After the medical separation, the Vaseline is applied to the wound edges for ten days twice. After the operative separation, betamethasone ointment is applied to the wound edges for 2 weeks twice. This prevents the wound edges from sticking again until the wounds complete epithelialization.

Two main techniques were: a manual separation (MS) in cases between January 2016 and March 2017 (Group 1) and a surgical separation (SP) in cases from March 2017 to March 2018 (Group 2).

In MS technique; approximately 30 minutes after application of EMLA (a topical prilocaine 2.5% / lidocaine 2.5% combination; APP Pharmaceuticals) with moist gauze directly to the fusion area, the labia majora grasp with wet gauze and separation performed by pulling the labia to the laterally.

In SP technique; the adhesion area is carefully placed under tension and opened from cephalad to caudadirection (or vice versa) with a mosquito clamp. Gentle touches to the fusion tissue should be made and rough movements should be avoided.

Statistical analysis was performed using MedCalc-version 18.10 software. Independent two-group comparisons for statistical analysis were performed using the Mann Whitney U test. The ratios of the categorical variables between the groups were tested by Chi square analysis, and Fisher's exact test if the number of samples is less than five. In addition, Odds Ratio, Relative Risk, and risk (%) were calculated. The level of statistical significance was set at $p < 0.01$.

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable

ethical standards. This was an observational, retrospective study so it was not necessary to request informed consent. Data were anonymized.

RESULTS

A total of 66 patients were included. The average age was 17.1 (3-111 month) month. The most frequent (54%) cause of the admission ($n=36$) was the LA detected during the routine examination, while 20% of the patients with LA ($n=13$) had complaints. The complaints are shown in Table 1. Recurrence was identified in 19 (28.8%) cases. The average follow-up time was 16 (6-24 month) month.

There were 27 (41%) cases in Group 1 and 39 (59%) cases in Group 2. The average age was 19.5 (3-96 month) month in Group 1 and 15.5 (3-111 month) month in Group 2. The average follow-up time was 22.7 (19-24 month) month in Group 1 and 13.3 (6-18 month) months in Group 2 (Table 2).

Table 1. Reason for admission of the pre-pubertal girls with labial fusion

Reason for admission	Number n (%)
Incidental finding in the course of a medical check-up	36 (54%)
Family notice	17 (26%)
Restlessness during urination	7 (10%)
Strain during urination	3 (4.5%)
Recurrent urinary tract infection	3 (4.5%)
Total	66

Table 2. Comparison of the results of two main techniques used in the surgical treatment of labial fusion

	GROUP 1	GROUP 2	P
Age	19.5 (3-96 month) months	15.5 (3-111 month) months	0.857
Recurrence	14 (51.8%)	5 (12.8%)	<0.05
Symptoms	2 (7.4%)	9 (23%)	0.57
Follow-up time	22.7 (19-24 month) months	16.3 (6-24 month) months	0.87

There were 14 recurrences in Group 1 (51.8%) and 5 recurrences in Group 2 (12.8%). In this study, there was no recurrence in any patient with symptoms (Table 2). As seen in the table 2, no statistically significant difference was found between groups by age, symptoms, and follow-up time. The recurrence rate was significantly higher in Group 1. This difference between groups was statistically significant ($p=0.0006$). Age, symptoms, and follow-up time did not have a significant effect on the recurrence. The average recurrence time was 11 (5-20 month) months.

There were multiple recurrences in five of 14 patients who had a recurrence in the MS group; 2 recurrences in 2 patients and 3 recurrences in 3 patients. SP was performed in all of 5 patients with recurrence, and no recurrence was observed after surgical separation.

In the SP group, there were 2 recurrences in one patient.

The remaining 4 patients had only one recurrence. Recurrences in this group were also treated with the SP technique.

DISCUSSION

Labial adhesion is a common gynecologic problem in prepubertal girls. Adhesions occur most commonly between 6 months and 2 years of age (3). In our study, 70% of cases were observed under 2 years of age, similar to the literature. LA is thought to be more common than outpatient presentations. It is suggested as examinations are rarely performed, except when indicated by the symptoms (4). Therefore, it is very difficult to predict the actual incidence of the LA. The incidence of LA in the literature ranges from 0.6 to 5% (3,5,6).

In our study, 20% of the patients with LA had complaints. In the literature, the incidence of symptoms in LA patients is reported to be between 10% and 40% (1,7,15). However, the most important issue was that none of our patients with recurrence were symptomatic. In the literature, we have not encountered any such information. In symptomatic patients, the possibility of recurrence seems more logical, but we are facing the contrary situation. We do not know whether this finding is meaningful at this stage, but we think that this may be due to the fact that the mothers of symptomatic patients have more attention on the application of the ointment, vulvar cleaning, and hygiene after treatment. This issue should be supported by further studies.

In the literature, there is a pronounced controversy as to how to treat pre-pubertal labial fusion. Since they are usually asymptomatic, in patients without symptoms, observation without intervention should be considered. When treatment is indicated, topical estrogen or betamethasone remain the first-line treatment (1,5,15).

LA is probably associated with the hypoestrogenic state of the prepubertal girls. There are some reasons to think that way; first of all, LA is very uncommon in the newborn period when there is a period of mini-puberty. On the other hand, LA is very uncommon during the post-puberty when there are adequate estrogen levels (8). This estimate and studies are the main reason for the use of topical estrogen in labial fusion therapy. This choice of treatment was successful in approximately 50%-88% of patients, resulting in separation of the adhesion in about 2-8 weeks (9-12). But, some studies are against the idea that mentioned above (13). Furthermore, the topical estrogen use can cause systemic absorption. The breast budding, pigmentation changes of the vulva were also reported in several of the studies (9,10,14). Topical betamethasone 0.05% is an alternative for the management of labial adhesions without or with minimal side effects (1,9,15). Because for these reasons above, as well as due to success in our phimosis patients, we prefer to use betamethasone in the topical treatment of LA.

There is no consensus among the authors about the indications for surgical treatment of labial fusion. Although

some clinicians recommend interventional option as first-line management (16,17), surgical treatments are usually reserved for cases not responsive to topical treatment, or for those with dense adhesions (1). Before discussing this topic, surgical treatment techniques should be defined. Because this issue is very complicated and confusing in the literature. We tried to simplify this issue; in general, two types of techniques are always discussed. The first and the less complicated of them is manual separation. Most of the studies describe manual septation as a lateral traction of the adhesion. But Bussen et al., describe manual separation as a separation performed with a moistened Q-tip (18). Except this, the use of "instruments" in manual separation has not been shown in any study. Therefore, the genuine manual separation was defined as a separation technique without instruments.

The second technique of surgical treatment is surgical separation. There is no specific technique of surgical separation in the literature. Most studies do not provide details of the techniques. But studies describe the use of a lubricated Q-tip, or probe, or Mosquito clamp inserted into the opening in the adhesions and pulled along the raphe. Nurzia et al. describe a novel surgical technique in which the adhesions were clamped from cephalad to caudad using a straight hemostat, then incised using a sharp iris scissor, following this the cut edges oversewn using running 7-0 chromic suture (17). If we try to define this technique of Nurzian or the techniques used in sharp instruments as genuine surgical separation, we think it would be more accurate to define the other "surgical" techniques as a separation with instruments (SWI). Therefore, the study of Nurzian et al. and studies (20) similar to the Nurzians were excluded from the evaluation when a comparison was made between the techniques.

The surgeon is confronted with a dilemma after the surgical decision has been made; which technique should be chosen? Manual separation or SWI? Of course, the most important issue to decide is the recurrence rate. There are different separately studies on the recurrence rates of the techniques. Recorded rates of recurrence for manual separation and SWI vary from 0% (19) to 76% (16) and 33% (18) to 41% (1) respectively. To our knowledge, this study is the first study in the literature comparing outcomes between the manual separation and SWI techniques in the same study.

In our study, the recurrence rate was statistically significant higher in the manual separation group. Nontechnical reasons, such as age, symptoms, application of betamethasone (have been used after separation in all patients for two weeks) and follow-up time did not have a significant effect on recurrence rate in the MS group.

In our opinion, the reason of higher recurrence rates in the MS technique is due to the "roughness" of the technique. MS in a forceful manner is the reason of the development of broad and irregular edges that may lead to recurrence of the adhesions (more traumatic methods may result in more fibrosis). We believe that studies evaluating manual

separation outcomes with low recurrence rates do not reflect reality. Because in some studies the number of patients is insufficient, (21) or the follow-up period is too short, (22) or the follow-up period is uncertain (23). In some studies, both the number of patients and the follow-up period is unsatisfactory (19). The follow-up period is a very important issue. Because in our study, recurrences occurred after an average of 11 months. However, the follow-up period in the above studies is quite short (3.2-7 months).

We have not used the Q-type and probe in SWI technique because we think that it also forms coarse and irregular edges. Instead of this, we used mosquito, which we thought would create thinner wound edges. This gentle technique attempts to minimize tissue trauma and therefore recurrent adhesions. Magnification with operating loupes might be helpful.

CONCLUSION

In conclusion, the treatment of labial adhesion with the surgical separation technique is superior to manual separation in terms of the possibility of recurrence. Additional prospective studies are still needed to strengthen these data.

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Ethical approval: All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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