รายงานผู้ป่วย

การรักษาภาวะปากแหว่งและเพดานโหว่ข้างเดียวแบบสมบูรณ์ โดยวิธีการการผ่าตัดซ่อมแซมริมฝีปากและจมูกร่วมกับการจัดสันเหงือกก่อนการผ่าตัด : รายงานผู้ป่วย 1 ราย

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Treatment of Unilateral Complete Cleft Lip and Palate by Primary Lip-Nose Repair and Pre-surgical Orthopedic : A Case Report

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Abstract

Background: Infants born with a cleft lip-palate is a facial deformity that requires restoration of the integrity of the soft facial tissue. Interdisciplinary management provides the necessary integration of procedures, which will yield the most satisfactory results.

Objective: To present a unique procedure combining pre-surgical orthopedic treatment and primary lip-nose repair for infants with unilateral complete cleft lip and palate.

Design: A retrospective, descriptive study.

Setting: Orthodontic Department, Faculty of Dentistry and Division of Plastic Surgery, Department of Surgery, Faculty of Medicine, Khon Kaen University.

Intervention: First the patient received pre-operative orthopedic treatment. A passive obturator was used as an adjunct to aid feeding and guide growth of the lateral palatal segments. Combined primary lip and nasal reconstruction, were done during a single surgery.

Results: The patient came to hospital with complete unilateral complete cleft lip and palate. A passive obturator with lip strapping was prescribed to resolve feeding problems and guide the growth of palatal segments. A one-stage surgery combining lip and nasal reconstruction was performed. The surgical lip and nose revision yielded good early aesthetics of the soft lip and nose tissue.

Conclusion: Pre-surgical orthopedic treatment combined with primary lip-nose repair is an effective treatment of unilateral cleft lip and palate.

บทคัดย่อ

หลักการและเหตุผล: ทารกที่มีภาวะปากแหว่งและเพดานโหว่จำเป็นต้องได้รับการรักษาเพื่อบูรณะความสวยงามของใบหน้า การทำงานแบบสหวิทยาการและใช้เทคนิคการรักษาแบบบูรณาการที่เหมาะสม จะทำให้ผลลัพธ์ของการรักษาที่ดี

วัตถุประสงค์: เพื่อรายงานการรักษาผู้ป่วยที่มีภาวะปากแหว่งเพดานโหว่ข้างเดียวแบบสมบูรณ์ โดยการใช้การจัดสันเหงือกก่อนการผ่าตัดร่วมกับการผ่าตัดซ่อมแซมริมฝีปากและจมูกแบบปฐมภูมิ

รูปแบบการวิจัย: การศึกษาย้อนหลังเชิงพรรณนา

สถานที่ทำการศึกษา: ภาควิชาทันตกรรมจัดฟัน คณะทันตแพทยศาสตร์ มหาวิทยาลัยขอนแก่น และสาขาวิชาศัลยศาสตร์ตกแต่ง ภาควิชาศัลยศาสตร์ คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น

วิธีการรักษา: การรักษาประกอบด้วยการใช้เทคนิคโดยการใช้แผ่นเพดานเทียมและเทปคาดริมฝีปากก่อนการผ่าตัด และการผ่าตัดซ่อมแซมริมฝีปากและจมูกแบบปฐมภูมิ

ผลการศึกษา: ผู้ป่วยเด็กด้วยภาวะปากแหว่งและเพดานโหว่ข้างเดียวแบบสมบูรณ์ ได้รับการรักษาในเบื้องต้นก่อนการผ่าตัดเพื่อช่วยลดปัญหาในการดูดนมและเหนี่ยวนำการเจริญของสันเหงือกและเพดานปฐมภูมิโดยการใช้เพดานเทียม (obturator) และแผ่นเทปคาดริมฝีปาก (lip strapping) หลังจากนั้นผู้ป่วยได้รับการผ่าตัดซ่อมแซมริมฝีปากแบบปฐมภูมิ ผลการรักษาหลังผ่าตัดพบว่าผู้ป่วยมีความสวยงามของริมฝีปากและจมูกอยู่ในเกณฑ์ที่ดี

สรุป: เทคนิคของการรักษาที่ประกอบด้วย การจัดสันเหงือกก่อน

Key words: Obturator, unilateral complete cleft lip and cleft palate, primary lip-nose reconstruction.

การผ่าตัดร่วมกับการผ่าตัดโดยใช้วิธีซ่อมแซมริมฝีปากและจมูกแบบปฐมภูมิ สามารถให้การบูรณาการและผลการรักษาที่ดีในผู้ป่วยที่มีภาวะปากแหว่งและเพดานโหว่ข้างเดียวแบบสมบูรณ์

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Introduction

Cleft care in Thailand previously focused on cleft surgeries or the provision of care without interdisciplinary collaboration. This practice provided individual care but neglected important problems which resulted in revisions of treatment, unnecessary complications, lost economy and imperfect rehabilitation of cleft patients. A long-term integrated, interdisciplinary approach provides better care by coordinating professional assistance so children with clefts can lead normal lives.

Clinicians have rigorously tested various rehabilitation protocols for cleft lip and cleft palate patients and a large variation exists among the treatment centres. For example, surgery (cheiloplasty) to restore upper lip integrity is required for early aesthetics during the first year of life. One approach uses pre-surgical orthopedic appliances or an obturator. The appliance can be passive or active.[1] These appliances enable easier feeding and help to reposition the primary palate and/or the lateral palatal (alveolar) segments before the surgical procedure by decreasing tension in the soft tissue during and after surgical lip closure, which helps bring about better soft tissue aesthetics.

There are also variations in cleft surgery techniques. For example, in 1957 Millard reported the rotation advancement technique.[2] McComb then advocated primary cleft lip-nose repair since there was no alteration in the growth of the cartilage after nasal surgery.[3] Noordhoof reported a modification of the rotation advancement technique by minimizing the lateral cut at the alar base of the advancement flap[4] and the reconstructive technique of the vermillion in unilateral and bilateral cleft lip.[5]

Our purpose is to report a case of complete unilateral cleft lip and palate. The treatment involved a pre-surgical orthopedic step-using an obturator and active lip strapping-and the surgical step consisting of closure of the nasal floor-lip and nasal reconstruction-all in one operation. Details and results of this treatment are presented. The indications for such an approach will be discussed.

Materials and Methods

Case Report

The female patient was born in Sakhonnakorn Province, Thailand. She was 2,400 g at birth-the result of an uneventful, full-term pregnancy. She was a first child and the parents had no family history of clefts. However, the child was brought to Srinagarind Hospital at 9 days old because she was unable to breastfeed (suck) properly. The infant was given a nasogastric tube.

The physical examination revealed a wide cleft on the left side. The cleft width between the lip segments was approximately 20 mm (Figure 1). The left lateral lip segment was small. The nose was deformed-the cleft side dome depressed and the alar splayed. Her nasal dorsum and collumella deviated to the right side. The left alar rim was collapsed and the nasal septum was deviated to the right side (Figure 2).

An intra-oral examination revealed a complete cleft of the alveolus and palate. The width of the alveolar cleft was 13 mm, probably due to the very wide cleft, the infant had the habit of interposing her tongue in the cleft (Figures 3a and 3b).

The diagnosis was: Left complete unilateral cleft of the primary and secondary palate.

Figure 1: Frontal view of cleft lip and nose

Figure 2: Demonstrate asymmetric nose before surgery

Figure 3a: Demonstrate unilateral complete cleft lip and palate

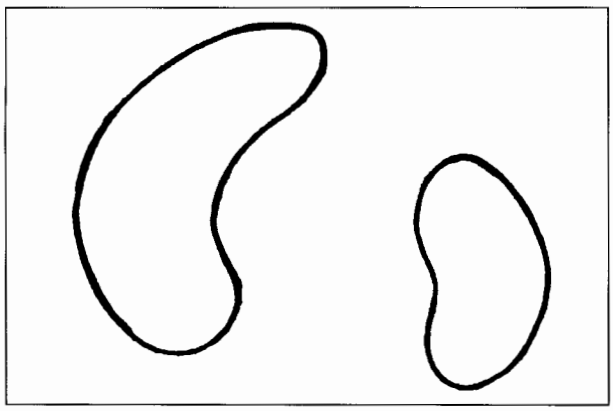

Figure 3b: Diagram demonstrates relationship of major and minor palatal segments

Pre-surgical Orthopedic Phase

A passive growth guidance feeding plate was used for pre-surgical orthopedic treatment. She was fit with an acrylic passive obturator at 9 days old. All attempts were made to keep the acrylic from intruding into in the cleft so as to allow growth of the lateral palatal segments and not hinder the growth of the medial segments. The obturator had to be worn at all times. The parents were instructed on how to put the lip strapping on the infant (Figure 4). The infant was followed-up about a month later, at which time the obturator was modified by grinding out the acrylic. The infant grew accustomed to the feeding device and could be bottle-fed so gained weight. The patient wore the obturator for 3 months before the lip/nose primary surgical repair and then its use was discontinued.

Surgical Phase: Primary Lip-Nose repair

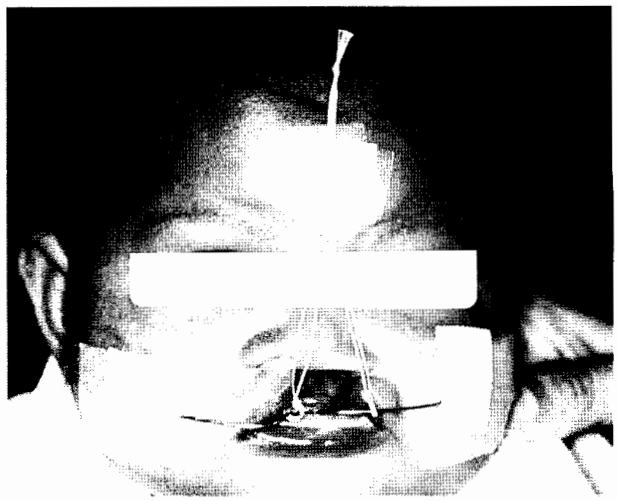

Figure 4: Demonstrate obturator for feeding and growth guidance of the palatal segments

At 3 months and 20 days, the child weighed 6,400 g. After pediatric clearance was obtained, she was prepared for surgery. The surgical procedures were designed to reconstruct the soft tissues of her upper lip and nose. The procedures, as described by Noordhoff, involved: 1) releasing and reaffixing the lower alar cartilage of the nose on the affected side, 2) reconstructing the nostril floor, 3) reconstructing the lip muscle, 4) reconstructing the lip vermillion, and 5) creating the alar groove of the nose.[6]

The lip incision was made by the rotation advancement technique, similar to Millard's technique. A C-flap was created which was used to lengthen the collumella. The three flaps on the left side-the inferior turbinate, the buccal mucosal and the median alveolar flaps-were developed into the nasal floor.

The creation of a triangular vermillion flap, used to reconstruct the deficient vermillion, was performed by incising the vermillion border of the left lateral lip segment.

Primary nasal reconstruction was performed. The left lower lateral cartilage was released from the overlying skin and its ligamentous attachments between the rim of the maxilla and the base of the lateral cartilage. It was repositioned superiorly and held in place with the upper lateral cartilage on the same side, and with alar transfixing sutures to the skin.

The reconstruction of the nostril floor was done by advancing the inferior turbinate and buccal mucosal flaps across the cleft and sutured to the base of the C-flap mucosa. Lip muscle reconstruction was performed by approximation of the orbicularis muscle. The free border of the lip's incision was closed with sutures. Skin closure of the nasal sill was completed by rotating the C-flap skin to its best fit to straighten and elongate the deviated columella. Finally, creation of the alar groove and fixation of the lower lateral cartilage was performed by placement of the alar transfixing sutures.

Results

The objective of early reconstruction of soft tissue is to achieve an aesthetic appearance as well as function. We used absorbable skin sutures, so the healing was uneventful. About 2 months after the surgery, there was near symmetry in the height of cupid's bow-with the upper lip vermillion approaching normal-although a slightly smaller width was demonstrated on the left side, probably due to the primary deficiency of the left lateral lip segment. The nose aesthetics were excellent with good nasal tip projection, almost perfect symmetry of both the right and left nostrils, and a nicely rounded left nostril. The collumella was straightened and with adequate length (Figure 5).

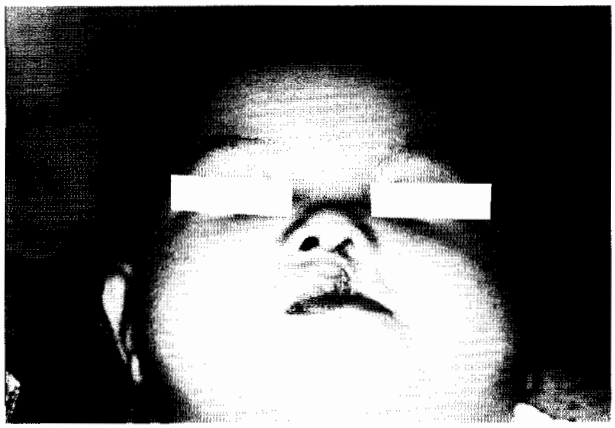

Figure 5: Results after one-stage lip-nose repair

Discussion

Primary correction of the unilateral cleft lip nasal deformity is a challenge for cleft surgeons. Previously, staged surgical repairs of the lip and nose were done separately. The conventional results of cheiloplasty alone usually left residual nasal deformities such as asymmetry of the right and left nostrils, and deviated collumella and nasal dorsum. The nostril shape on the cleft side was usually splayed laterally with a wider alar base than the non-cleft side. A concomitant surgical repair technique of the cleft lip nasal deformity was advocated and so the one-stage primary lip and nose reconstruction has become the state of the art for unilateral cleft lip repair.[6-10] The primary benefit of combining the lip and nose revision techniques is the significantly diminished incidence of labial revision.[11] In a 10-year follow-up study of patients who underwent primary correction of their cleft lip nasal deformity there was no interference with nasal growth, and the position of the alar cartilages and nasal tip were maintained.[5]

Variations of treatment protocols exist for unilateral complete cleft lip and palate primary lip/nose revision. Surgical techniques with or without pre-surgical orthopedic appliances have been reported and various types of active and passive pre-surgical orthopedic appliances have been used.[1] Active appliances include the alveolar and the nasoalveolar molding appliances which are used as adjuncts to primary lip/nasal repair. The nasoalveolar-molding appliance (NAM) is used to mold the nasal alar cartilages into a better form and position prior to surgery. This technique takes advantage of the malleability of immature cartilage and its ability to retain the correction of its form. Pre-surgical nasoalveolar molding has been reported to significantly increase the symmetry of the nose more than the alveolar molding appliance alone and the increase in symmetry is maintained long into early childhood. Besides, the use of the NAM technique reportedly eliminates the need for surgical columella reconstruction and the resultant scar tissue.[12-14]

In spite of the many advantages of nasoalveolar molding appliances, the condition of our patient did not allow use of this type of appliance because the cleft was too wide, and the impracticability of the family coming to hospital for frequent follow-ups. Moreover, due to the problem of deficient tissues of the minor segments of the palate in our patient, it was decided that a passive type of obturator should be used. The major and minor lateral palatal segments were already in good arch form and in good radial relationship with the lower gum pad, therefore, no attempt was made to actively rotate the segments or constrict the arch to reduce the gap in the cleft.[15] Selective space on the palatal aspect, especially the medial to lateral palatal segments and at the anterior part between the major and minor segments, was freed by grinding out the acrylic block in that area. The space thus created allowed inward growth of the segments, thereby, passively reducing the cleft width.

The benefits of pre-surgical orthopedics are still controversial. Severens *et al.* reported that the mean medical and travel costs for pre-surgical orthopedic treatment was significantly greater than that of no pre-surgical orthopedic treatment.[16] We feel that the cost-effectiveness of using active pre-surgical orthopedics for reduction the cleft width in our patient was not justified because the timing of the surgical lip closure would have to have been deferred and the cost to the family increased beyond their economic means.

The unique features in our patient were 1) the deficient tissues affecting the lip and the minor lateral palatal segment, 2) the large cleft width, and 3) the passive growth guidance feeding plate. As demonstrated in our patient, it is possible to achieve early aesthetic results using Noordhoff's single stage primary lip-nose surgery repair technique. Cutting *et al.*[17] concurred that the amount of collumella elongation derived from appropriate surgery is adequate for the Asian nose, which we certainly observed in our patient.

Some slight relapse was observed at the left nostril. The circular shape achieved by the reconstruction drooped slightly by the time of the follow-up. Noordhoff recommended using a silicone nasal conformer or stent post-operatively to prevent contraction of the wound. He demonstrated that post-operative nasal splinting in the primary management of the unilateral cleft nasal deformity serves to preserve and maintain the corrected position of the nose after the primary lip and nasal correction, resulting in a significantly more aesthetic result. It is therefore recommended that all patients undergoing primary correction of complete unilateral cleft deformity use a nasal retainer postoperatively for a period of at least 6 months.[18] Because this type of device was not available in our hospital, our patient did not have the advantage of it, which probably led to the slight relapse detected.

Conclusion

The cleft lip-palate infant reported in our case report initially received a passive obturator and lip strapping to resolve feeding difficulties and guide the growth of the major and minor alveolar segments before corrective surgery. Noordhoff's primary lip and nasal repair procedure was performed. Rotation advancement was done on the lip. Primary nasal reconstruction with repositioning and fixation of the lower left lateral cartilage were also performed in the same operation. This integrated approach with interdisciplinary management is recommended for treatment of cleft lip and palate care.

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