A CASE OF TESSIER TYPE II CLEFTING ILLUSTRATING
SURGICAL PRINCIPLES

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This paper reports the clinical description of a case of Tessier Type II Clefting and the surgical principles used in correcting the associated deformities.

Key words: Tessier Type II Cleft, clinical description, surgical correction and principles.

Introduction

This paper illustrates the surgical principles employed in the management of a case of incomplete nasomaxillary dysplasia or Tessier Type II Cleft. All pre-operative work-up on this case was performed at The Adelaide Children's Hospital by members of The South Australian Craniofacial Unit and hospital staff. The surgical treatment was planned and executed by Professor J. C. van der Meulen who was a keynote speaker at the ‘Workshop On Craniofacial Clefts’ held in May 1986. The audience at the workshop were able to view highlights of the surgical procedure by live ‘microwave television link’ and discussion between audience and operating surgeon was carried out regarding difficult or contentious points of technique.

This patient was one of seven cases of craniofacial clefting brought to Adelaide for the craniofacial workshop and one of three operated on by key speakers during the workshop week. It represents one in a series of 38 cases of craniofacial clefting treated by The South Australian Craniofacial Unit since its inception in 1975.

Case presentation

This patient was a 4 year old male child from Malaysia. He was the first born son of normal parents and two subsequent siblings were both normal. He presented with a Tessier Type II Cleft or incomplete nasomaxillary dysplasia and a complete cleft of his primary and secondary palates.1 At birth the maternal age was 17 years with a paternal age of 28 years. The pregnancy and delivery were both without incident. In early infancy there were some

feeding and speech intelligibility problems but no surgical or orthodontic measures had been instituted.

Examination on arrival in Adelaide (Fig. 1) revealed a normal cranial index. The medial inter-canthal distance was 3.6 cm, the lateral inter-canthal distance was 10.5 cm and the interpupillary distance was 5.6 cm. All of these measures are above the ninety-seventh percentile. There was a complete unilateral cleft on the right side including lip and palate. There was a signifi-

Fig. 1. Case demonstrating clinical features of Tessier Type II Cleft; prominent ears and minor degree of telecanthus and hypertelorism.

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Accepted for publication 24 September 1986.
Fig. 2. Anterior bite in region of the cleft and short vertical height between the right alar base and the vermilion of the cleft lip. 

cant notch of the right nostril just lateral to the dome of the alar cartilage and a palpable depression over the right nasal bone suggestive of hypoplasia in this area. There was 6/6 vision in each eye but a paresis of the right superior oblique muscle produced a right divergent squint with a right hypertropia. An anterior open bite associated with the cleft was seen (Fig. 2). An anteroposterior plain X-ray showed a grossly deviated nasal septum convex to the right (Fig. 3). Both ethmoids were well developed as were both maxillary antra. In addition the left frontal sinus was well developed but there was no sinus present on the right. Despite the clinical measurements the bony interorbital distance appeared normal. The three-dimensional CT scan (Fig. 4) demonstrated the distortion of the alveolus around the cleft as well as hypoplasia and notching of the right nasal bone. In addition there was a suggestion of right maxillary hypoplasia.

The geneticist in the present series confirmed that this was a cleft associated with brachycephaly from a flat occiput with associated bilateral bat ears. There was evidence of mild developmental delay and a maternal cousin once removed had a history of bilateral cleft lip and palate. It was thought that the risk of recurrence of this disorder in succeeding generations would be low.

Speech development was grossly delayed, the
Fig. 4. Three-dimensional CT scan image confirming the cleft in the maxilla and the notching of the nasal bone on the right side.

child using one word utterances only. However, his receptive language was reasonably well developed. Hearing was normal and the tympanic membranes revealed no evidence of middle ear disease. A psychosocial assessment showed that this young boy's deformity was causing much distress within the family. He was isolated from the rest of the family and shunned by other children, and parental concern regarding his future was at a very high level.

Surgical procedure

Figure 5 shows the external skin markings and the alveolar mucosal marking on the medial segment. A large alveolar mucosal flap was raised on each side of the cleft based on the lingual side of the alveolus. These flaps were turned back and in to produce continuity of lining in the anterior hard palate area. In Fig. 6 the dashed line indicates the incision made along the septal mucosa. The mucosa superior to the dashed line was reflected upwards to meet mucosa from the lateral element and line the right nostril floor. The mucosa inferior to the dashed line was turned downwards and used to help bridge the oral mucosal gap.

Combined with a flap from the minor segment on the right the hard palate mucosa was closed as shown in Fig. 7. Having completed mucosal closure on both the nasal and oral sides of the hard palate cleft, a fairly large gap was seen to exist between the two mucosal layers. To eliminate the gap a large free graft of periosteum was taken from the tibia of the right leg and carefully packed into the space between the nasal and oral linings.

The next problem confronting the surgeon was the unusual shortness of vertical height between the base of the right nostril and the vermilion compared to the height of the medial lip element. This problem was solved using a V-Y technique as shown in Fig. 8. In this figure the plan of incision along the rim of the right nostril can be seen extending sharply back in to the vestibule of the nose. After dissection of the mucosa this was inverted inwards and sutured. In V-Y fashion the skin of the nostril base was then sutured across the previously closed lining which effectively raised the base of the nose vertically away from the vermilion of the lip giving extra length in this area. However, this length of lip...
The Veau Type hard palate mucosal flap has been elevated and sutured to the septal mucosal flap which along with the two anterior alveolar flaps have produced closure of the oral lining on hard palate and alveolus.

Fig. 8. Dotted line indicates proposed rim incision to allow V-Y upward advancement of the alar base to lengthen the upper lip.

was gained at the expense of the nostril rim which was proportionately shortened.

Having completed the manoeuvre at the nostril base the lip was closed after dissection and suture of muscle. The upper lip mucosa was also advanced on each side and used to close the labial side of the alveolar mucosal defect. The lip repair was made continuous with the repair of the lining of the nostril floor. The next and final stage was reconstruction of the nose including the coloboma of the right nostril. To achieve this a small triangular skin flap from immediately above the coloboma (outlined in

Fig. 9. The lip has been closed and a triangular flap turned down to form the nasal lining of the nostril cleft. The arrow indicates the advancement of the large nasal glabella rotation flap.

Fig. 10. Clinical result at 2 weeks post-surgery showing good lip form but a slightly smaller nostril circumference on the right side.

Fig. 11. Clinical result at 2 weeks. Good lip form is also seen in this view. The scarring on the lip and nose is minimal. A small notch still exists in the right nostril sill.
Fig. 5) was turned down as shown in Fig. 9. This flap provided lining on the nasal side of the coloboma. A large nasoglabella rotation flap was then advanced and rotated to cover the secondary defect in the nose. The clinical result 2 weeks after surgery is shown in Figs 10 and 11.

Discussion

This case presented several unique problems of soft tissue reconstruction: (i) Provision of adequate soft tissue lining on both the nasal and oral side of a broad hard palate and alveolar cleft; (ii) Increasing the vertical distance between the base of the nose and the vermilion on the lateral element of the cleft lip; (iii) Skin and nasal mucosal correction of the notch in the right nostril; (iv) Minimization of surgical scar. All of these problems were successfully addressed during this procedure using the principles previously outlined by van der Meulen. Lengthening the vertical distance between the alar base and the vermilion of the lateral element of the cleft lip was achieved with minimal scarring but at the expense of nostril rim length as can be seen in Fig. 10. However, it will be a simple matter to correct this problem and that of the small notch remaining in the right nostril by a secondary procedure; probably a composite graft from the ear. As can be seen in Fig. 11 the lip has good form and symmetry.

It is interesting to speculate on the effect of this surgery on arch form and this will be assessed in the future. Because of this family's poor financial situation it is unlikely that orthodontic treatment will be able to be offered.

References