

## Primary cheiloplasty on an elderly man: Case report and review of the literature

Shahid R. Aziz, DMD, MD, FACS<sup>1</sup>/Anita Puran, PhD<sup>2</sup>

It is rare for surgeons in the United States to perform primary repair of a cleft lip on an adult. However, in developing nations with limited specialized health care, late presentation for primary cheiloplasty occurs due to limitations in access to care, lack of awareness of treatment availability, and inability to afford treatment. Oral and maxillofacial surgeons who participate in humanitarian surgical mission trips to the developing world may encounter this subpopulation of cleft patients. The following case report describes the repair of an incomplete bilateral cleft lip in a 68-year-old man performed during a mission to rural Bangladesh. Based on an extensive literature search, this is the oldest patient to have undergone primary cheiloplasty reported in the English language surgical literature. (*Quintessence Int* 2012;43:xxx-xxx)

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### CASE REPORT

A 68-year-old man presented with a bilateral incomplete cleft lip (Fig 1a). When asked why he never attempted to have it repaired, the patient stated that until recently, he did not know his lip could be repaired. In addition, the patient was a cattle farmer from a rural village; as such, he could not afford treatment nor did he have easy access to medical care. He hoped to have his lip repaired because had been recently widowed and hoped to remarry. Standard preoperative testing was completed (complete blood count, coagulation studies, blood chemistries, electrocardiogram, and chest radiography). On physical exam, the patient had a bilateral incomplete cleft lip deformity and an edentulous maxilla, except for a carious maxillary central incisor with severe bone loss that was subsequently extracted during the lip repair. The repair was completed utilizing the Millard bilateral technique, a one-stage rotation advancement technique.<sup>1</sup> Because of this patient's age and long-standing maxillary edentulism, dissection was difficult as a result of atrophy of the soft tissue of the upper lip due to a lack of orbicularis continuity (Fig 1b). Attention was directed to repairing the cleft lip with the goals of restoring the anatomical continuity of the orbicularis oris muscle and soft tissue of the upper lip, creating symmetry of the alar

<sup>1</sup>Associate Professor, Department of Oral and Maxillofacial Surgery, and Associate Professor, Department of Surgery Division of Plastic and Reconstructive Surgery, UMDNJ–New Jersey Medical School, Newark, New Jersey, USA.

<sup>2</sup>Executive Director, Smile Bangladesh, Mountainside, New Jersey, USA.

**Correspondence:** Dr Shahid Aziz, 110 Bergen St, Room B854, Newark, NJ 07103. Email: [azizsr@umdnj.edu](mailto:azizsr@umdnj.edu)



**Fig 1a** (a) A 68-year-old man with a bilateral incomplete cleft lip. (b) Intraoral dissection, with the orbicularis muscle reconstructed. (c) Photograph 1 day after repair.

base, lengthening of the upper lip, placing the surgical scar in an anatomically advantageous position, and reconstructing the cupid's bow so that the vermilion was continuous and the two peaks of the cupid's bow were at the same level vertically. Deeper layers of the repairs were closed with 4-0 vicryl sutures; resorbable sutures were used at the dermal level (5-0 fast absorbing gut) (Fig 1c). Postoperatively, he was admitted for 2 days of intravenous antibiotics and observation. The patient was discharged with a 1-week supply of oral antibiotics and instructions for wound care. Follow-up appointments were made 10 days postdischarge, but the patient was noncompliant.

## DISCUSSION

Current standards of care in the United States include repairing a cleft lip at 10 to 12 weeks of age, following the rules of 10 (10 weeks, 10 pounds, and hemoglobin of 10). This early timing of repair has been shown to be advantageous since the cleft is not too wide at this point. Early repair of cleft lips does have some disadvantages, including potential restriction of maxillary growth. Multiple studies have compared unrepaired adult cleft lip maxillary morphology with that in adults with repaired clefts. The results of these studies<sup>2-7</sup> are summarized below.

Adults with unrepaired cleft lips have maxillae with normal to slightly prognathic cephalometric positions anteriorly and posteriorly and have normal to widened maxillary transverse widths. It is thought that in unrepaired cleft lips, the noncleft segment of the anterior maxilla is allowed to rotate laterally and anteriorly from a lack of orbicularis oris muscle continuity of the upper lip. An intact orbicularis muscle creates functional forces that help mold the maxillary arch form. A lack of continuity in the upper lip soft tissue minimizes these functional forces, allowing the noncleft maxillary segment to develop relatively unchecked, increasing its transverse, anterior, and posterior dimensions. From a cephalometric standpoint, the SNA angle is normal to slightly increased. The mandibular skeletal relationship to the cranial base in an unrepaired cleft patient is equivalent to an otherwise healthy individual or slightly retrognathic. This may create a relative Class II skeletal relationship due to a mildly prognathic maxilla.

From a dental perspective, the maxillary anterior dentition in an unrepaired cleft lip patient tends to be proclined, protruded, and often rotated, resulting in increased overjet. In the repaired cleft lip patient, the lip repair uprights the maxillary anterior dentition, perhaps even slightly retroclining these teeth, often resulting in an edge-to-edge occlusion or anterior crossbite.

What is initially most striking about repairing a cleft lip in an adult is that the anatomical landmarks are significantly easier to discern compared with those of an infant. In addition, there is more redundant soft tissue that can be sacrificed during the repair. However, the dimensions of the cleft defect itself can be significant; as such, aggressive soft tissue dissection may be required as the rotation/advancement flaps are raised. These maneuvers would allow for reasonable tension-free closure of the cleft lip and good symmetry in the alar base reconstruction but may sacrifice esthetic scar placement. Postoperatively, secondary to significant muscle dissection, adult cleft lip repairs may have significant edema, lasting for 2 to 3 weeks. As such, intraoperative steroids may be useful in minimizing this edema. In adult bilateral lip

repair, the incisive bone segment may be severely displaced anteriorly and require an osteotomy to reposition posteriorly.

It should be noted that maxillary anterior teeth may interfere with lip closure since these teeth are often protruded and rotated, which creates tension and a tenting effect on the lip repair. While it is preferable to retain these teeth, if the angulation/rotation of any of these teeth compromise adequate repair, extraction should be considered.

There are numerous studies in the literature discussing the craniofacial morphology of the unrepaired cleft patient; however, there are very few studies specifically discussing primary lip repair in the adult. Morioka et al<sup>8</sup> discussed their experience during surgical mission trips to Nepal with similar observations to those in this report. Schwarz and Khadka found that reasons for adults presenting late for primary repair included a lack of awareness of cleft services, living in remote locations with little access to care, and a lack of financial wherewithal.<sup>9</sup> Berk et al<sup>10</sup> found that adults with orofacial clefts had significant social anxiety and low self-esteem and were socially isolated. This validates the positive social impact a lip repair has on adult cleft patients. Boo-Chai,<sup>11</sup> in a study of adult bilateral cleft defects, noted that removal of the prolabium and incisive bone resulted in a significant midface deficiency. As such, while the incisive bone may be anteriorly displaced, making it more challenging to restore orbicularis continuity, it is important to retain this segment of the maxilla. Mantinaos documented the primary repair of a 66-year-old Greek woman with a bilateral cleft lip and discussed a technique in which the prolabium was removed, combined with significant alar base dissection and mobilization.<sup>12</sup> While the resulting repair was a significant improvement for this patient, removing the prolabium resulted in a loss of cupid's bow and the development of a midline scar. Kumar published a study on 10 cases of adult unilateral lip repair and combined the Millard rotation advancement technique with simultaneous pyriform rim bone grafting to provide improved alar base symmetry.<sup>13</sup> Finally, Murthy<sup>14</sup> noted that in bilateral complete adult cleft lip patients, if the incisive bone protruded more than 8 to 10 mm, compared with the lateral arch,

she advocated incisive bone setback as an initial surgery (often in conjunction with palatoplasty), followed by primary cheiloplasty 6 months later. For incisive bone setback, the required amount of bone is removed anterior to the junction of the vomer and incisive bone (vomeropremaxillary suture). The incisive bone is held in a new position, and fixation is completed with a K wire.<sup>15</sup> From our experience on multiple medical mission trips to rural Bangladesh, there is a lack of follow-up with most patients who participate in cleft camps due to the fact that these patients often travel great distances for surgery, are impoverished, and exhaust their meager resources traveling for surgery. In addition, due to the excessive tropical climate, where the mean temperature from March to November is between 30°C and 40°C, there is an increased risk for local wound infection.<sup>1</sup> As such, antibiotics are often given intravenously for 1 to 2 days postsurgery. The patient is sent home with additional oral antibiotics, antibiotic ointment, and wound care instructions.

## CONCLUSION

The primary repair of adult cleft lip provides the surgeon with an opportunity to improve a patient's life with a relatively short surgical procedure. There are some modifications required when repairing an adult-sized cleft lip compared with that of an infant. The increased dimensions of the cleft may require more aggressive soft tissue dissection, which can result in postoperative edema. The unrepaired cleft lip allows the maxilla to develop in a slightly prognathic position relative to the mandible, with proclined maxillary anterior teeth. These teeth can create tension on the lip repair, requiring extraction. Following basic surgical principles of cleft repair, the surgeon will achieve an acceptable result with some mild modifications as described.

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