

Total reconstruction of the nose in settings where resources are limited

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Accepted 7 October 2015

Available online 29 October 2015

Abstract

We describe a series of 8 patients who had total reconstruction of the nose during 4 separate missions to Ethiopia. The aetiology was noma (n = 3), assault (n = 2), acid burn (n = 1), squamous cell carcinoma (n = 1), and a sequela of meningococcal septicaemia (n = 1). Reconstruction was with forehead flaps when adequate tissue was available (n=6) and with radial forearm flaps when it was not (n=2). Some reconstructive approaches require procedures to be done in stages, and in settings where resources are limited, difficulties with the continuity of care and provision for the management of complications, must be overcome.

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Keywords: Noma; Nose reconstruction; Resource-poor

Introduction

Loss of the nose causes deformity, and can result in psychological and sociological problems. Appropriate treatment can help to rehabilitate patients, reintegrate them into their communities, and improve their quality of life, but it requires complex staged interventions and presents difficult challenges to the patient and the surgical team. In settings where resources are limited additional challenges include the availability of relevant specialists, the need to provide adequate follow up and the establishment of an infrastructure for the management of early and late complications.

Total reconstruction of the nose is best managed with local flaps that provide a good tissue match, have an acceptable morbidity profile, and are well described in published papers.¹ In rare cases when local tissue is of poor quality or unavailable, new methods of reconstruction must be sought.² Patients with defects caused by noma may present with considerable loss of bone and soft tissue, and the surrounding structures must be reconstructed before the nose.^{3–6}

We describe our experience of total reconstruction of the nose in Ethiopia over a 4-year period.

Patients and methods

Over 4 separate missions to Ethiopia between February 2011 and February 2013 with the charity Facing Africa, 8 patients had total reconstruction of the nose. The aeti-

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Table 1
Patients' details.

| Case No. | Age (years) | Sex | Aetiology | Stage 1 | Stage 2 | Stage 3 |
|----------|-------------|-----|---------------------------|---|--|--|
| 1 | 51 | F | Assault | Total reconstruction of the nose with forehead flap and costal cartilage graft | Pedicle released and flap inserted | - |
| 2 | 12 | M | Noma | Parascapular free flap to reconstruct left ? 'face' | Total reconstruction of the nose with forehead flap and costal cartilage graft | Pedicle released and flap inserted |
| 3 | 15 | F | Meningococcal septicaemia | Total reconstruction of the nose with forehead flap, and costal and auricular cartilage graft | Pedicle released and flap inserted | - |
| 4 | 18 | F | Noma | Osseocutaneous submental flap to reconstruct premaxilla | Nasal construct from split calvarial bone graft inserted into forearm | Free radial forearm flap, including nasal construct from calvarial bone grafted to face, and return of previous forehead pedicle |
| 5 | 46 | F | Squamous cell carcinoma | Submental flap to reconstruct upper lip | Total reconstruction of the nose with forehead flap | Pedicle released and flap inserted |
| 6 | 14 | F | Noma | Nose reconstructed with forehead flap, costal cartilage graft, and turnover flap for lining | Pedicle released and flap inserted | - |
| 7 | 19 | F | Acid burn | Nasal construct from split calvarial bone graft inserted into forearm | Free radial forearm flap including nasal construct grafted to face | - |
| 8 | 40 | M | Assault | Total reconstruction of the nose using costal cartilage (6th rib right side) and pedicled forehead flap. Nasal prongs to maintain patency of nostrils | Pedicle released and flap inserted | - |

ology was noma (n = 3), assault (n = 2), acid burn (n = 1), sequela of meningococcal septicaemia (n = 1), and squamous cell carcinoma (SCC) (n = 1). Defects caused by noma were classified according to the NOITULP scheme (nose, outer and inner lining of the cheek, trismus, upper and lower lip, and particularities).⁷ Patients' details are shown in Table 1.

At least 2 weeks before the operation, patients were admitted to a secondary care facility staffed by a doctor and 4 nurses where their health was assessed and nutritional supplementation provided.⁸ Only patients who were physically robust were operated on. During a 2-week visit, a surgical team from the United Kingdom did up to 10 operations each day, predominantly facial reconstructions of defects caused by noma. High-power magnification was used during free-tissue transfer. There were no anaesthetic complications. Antibiotics were given at induction and for 5 days postoperatively, and enteral feeding was encouraged from the first postoperative day.

Patients usually remained in hospital for 3 days postoperatively (range 2 - 4). They were then transferred to a rehabilitation centre for a further 4 weeks (range 26 - 41 days) where they were cared for by one doctor and 4 nurses until healed. Good relations with a local hospital and local surgeons enabled cover for potential late complications.⁸

Case reports

Case 1

A 40-year-old man presented after his nose had been amputated during an assault (Fig. 1). His forehead tissue was not affected so we reconstructed his nose with a paramedian forehead flap in 2 stages. We used the remaining skin of the bridge of the nose as a turnover flap to provide the inner lining, and rib cartilage to create the L-strut and alar struts of the nasal construct. We then raised a paramedian forehead flap based on the supratrochlear artery to cover the framework and lining, and covered the donor site and nasal prongs with a split thickness skin graft. The pedicle was divided after 4 weeks, and the result was pleasing. There were no complications and he had patent, functioning nostrils.

Case 2

A 15-year-old girl had lost her nose and the distal phalanges of 3 digits on her left hand because of an infection at a young age. Venereal Disease Research Laboratory tests showed no sign of disease and a biopsy showed no active inflammation and no sign of mycobacteria. A sequela of meningococcal septicaemia was suspected. We reconstructed her nose with a paramedian forehead flap in 2 stages. In the first we used the

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