

# One stage Pharyngo-Oesophageal repair of a Pharyngocutaneous fistula and Oesophageal stenosis, using a pectoralis major musculocutaneous pedicled flap.

**Nwaorgu O. G. B.\* and Oluwatosin O. M.\*\***

Departments of Otorhinolaryngology\* and Surgery (Plastic Unit)\*\*, College of Medicine, University College Hospital, Ibadan, Nigeria.

Correspondence to:

**Dr. O. G. B. Nwaorgu**

Department of Otorhinolaryngology, College of Medicine, University College Hospital Ibadan, Nigeria.

A flap is described which utilized skin from the anterior chest wall on a narrow segment of the left pectoralis major muscle with its underlying axial neuro-vascular bundle to repair a pharyngocutaneous fistula in a 52 year-old female, who had a total laryngectomy for a recurrent well differentiated squamous cell carcinoma of the larynx after radiotherapy. Seven months post reconstruction, she developed oesophageal stenosis which responded well to bouginage. There was no evidence of tumour recurrence.

**Keywords:** One-stage, repair, pharyngocutaneous fistula, oesophageal stenosis, pedicled flap.

Pharyngeal reconstruction following extensive cancer surgery for the pharynx, larynx and cervical oesophagus, especially in the irradiated neck is a major surgical challenge<sup>1</sup>. Local flaps which have replaced free thick-split skin graft are only suitable for small defects in the non-irradiated skin as previously irradiated skin have poor blood supply<sup>2,3</sup>.

Musculocutaneous flaps have the advantage of transferring richly vascularised skin for repairs. Distant axial flaps, such as the delto-pectoral flap may provide good repair flaps, but may require:

- a. several stages before reaching the recipient site,
- b. a wide base to get enough length,
- c. skin grafting to close the donor site and may not provide bulk to fill in large defects<sup>4</sup>.

Microvascular flaps, such as the radial forearm or a segment of the ileum can be transferred as free flaps to the neck to reconstruct the pharynx.

The purpose of this paper is to present our experience with a one-stage pharyngo-oesophageal repair of a pharyngocutaneous fistula and oesophageal stenosis, using a pectoralis major

musculocutaneous pedicled flap.

### Case Report

Our patient is a 52 year-old female, seen in November, 1994 with a T<sub>3</sub>N<sub>2</sub>M<sub>0</sub> well differentiated squamous cell laryngeal carcinoma. She opted for radiotherapy treatment and could not be decannulated after treatment. In April, 1996 she had a total laryngectomy. She developed wound sepsis on the tenth day post-operatively with subsequent development of pharyngocutaneous fistula, about 1.5cm above the tracheostome. The fistula persisted in spite of all conservative measures, thus, prompting the reconstruction.

At operation, a Sorenson U-flap was used to expose the pharynx. The findings were a severely narrowed pharynx almost near total, from the base of the tongue, sparing only the pharyngo-oesophageal junction with fibrous adhesions about the pharynx. There were no easy vessels for free flap.

Release of the pharyngeal tightness by opening anteriorly, leaving mucosa in 30% of a normal pharyngeal circumference was done. A pectoralis major musculocutaneous flap was

elevated. The strip of skin between the left clavicle and the inferior border of the neck wound was incised to create a bed for the pectoralis major muscle.

The pharyngeal defect was repaired by tubing the skin and suturing it with the epidermal surface inside to the edges of the mucosal strip, the pharyngeal opening at the base of the tongue and the oesophagopharyngeal junction, using interrupted 3/0 and 4/0 vicryl and dexon sutures, respectively. The skin inland was trimmed to suit the pharyngeal defect.

Redevac drain was inserted and the neck flap closed in two layers with 2/0 vicryl and 4/0 prolene sutures, respectively after excising the skin part of the fistula. The donor site was closed by direct suturing using continuous 2/0 nylon sutures.

Post-operatively, patient did well and had dye test on the fourteenth day without any leakage. She was commenced on fluid diets by mouth.

The lateral view of barium swallow done on the twenty-eighth day post-operatively revealed narrowing and irregularity in the outline of the reconstructed segment. The antero-posterior view was inadvertently not taken.

Patient was discharged home on the thirtieth post-operative day, having no disturbance with feeding.

She was symptom-free till the seventh month post reconstruction when she presented with a day's

history of pharyngocutaneous fistula 5cm x 5cm, about 2.5 centimeters inferior to the angle of the right jaw. She had had an insidious dysphagia two months prior to presentation.

A fleshy mass and pharyngoesophageal stenosis was noted at 10cm from the upper incisors at examination under anaesthesia. The mass was excised and was confirmed granuloma histologically.

She had nasogastric tube feeding and monthly gentle serial bouginage. Six months later, she has remained well.



Fig. 1:



Fig. 2:



Fig. 3:

### Discussion

It is often a nightmare for a patient to learn that his voice may not be same again after a laryngeal surgery. To this is added the social implications of wearing a permanent tracheostomy tube in the Nigerian society, hence the preference of radiotherapy treatment for advanced tumours of the larynx by most of our patients. It is only when radiotherapy fails that surgery may be considered/accepted. A pharyngo-cutaneous or oro-cutaneous fistula can occur after a tumour surgery on the larynx or pharynx. This may be the end-product of such factors as previous radiotherapy, inadequate control of diabetes and anaemia in the pre-operative period, poor operative technique including a poorly made line suture<sup>5</sup>. Various techniques have been used in reconstructing the pharynx immediately during surgery and in cases of fistula developing after surgery<sup>1-7</sup>. These have their merits and demerits.

We could not use free flap mainly because there were no easy vessels that could be dissected out for anastomosis. However, for the closure/repair of an established pharyngo-cutaneous fistula in the irradiated neck, the pectoralis major musculocutaneous flap is the most reliable method available now and suits nine out of ten of such fistula<sup>5</sup>.

The anatomy of the blood supply of the pectoralis major muscle is remarkably constant. The pectoralis major musculocutaneous flap is a richly vascularised axial flap that may be elevated for some distance on the vessels alone or with a strip of the muscle to provide bulk to augment contour of the neck and protect the carotid artery<sup>8</sup>.

The intact motor nerve that is transferred with the pedicle of pectoralis major muscle, may also tend to prevent atrophy and contraction later. In our patient, the skin over the buried portion of the muscle was removed, thus eliminating a latter pedicle division.

Post operative contracture and stenosis is a

recognised complication of pharyngeal reconstructive surgery<sup>2</sup>. The sites involved most are at the proximal and distal pharyngoesophageal anastomotic suture lines. Other causes of contracture and stenosis include hyperactive scar tissue reaction, stitch granuloma and tumour recurrence. It is important to rule out tumour recurrence if stenosis is occurring six to twelve months after the operation<sup>2</sup>. Our patient had this complication and this resulted from stitch granuloma and contracture at the proximal anastomotic suture. She was managed with bouginage.

### References

1. Watson J.S. and Lendrum J. One-stage pharyngeal reconstruction using a compound latissimus dorsi island flap. *British Journal of Plastic Surgery*, 1991; **34**: 87-90.
2. Conley, J.J. One-stage radical resection of the cervical oesophagus, larynx, pharynx and lateral neck, with immediate reconstruction. *A.M.A. Archives of Otolaryngology*, 1953; **58**: 645-654.
3. Conley, J.J. Management of Pharyngostome, oesophagostome and associated fistula. *Annals of otology, Rhinology and Laryngology (St. Louis)*, 1956; **65**: 76.
4. Bakamjian V.Y. A two-stage method for pharyngo-oesophageal reconstruction with primary pectoral skin flap. *Plastic and Reconstructive Surgery*, 1956; **36**:173-183.
5. Maran A.G.D., Gaze M. and Wilson J.A. *Stell and Marans Head and Neck Surgery*, 3rd edition; Butterworth & Heinmann, pages 61-63.
6. Edgerton M.T. One-stage reconstruction of the cervical, oesophagus or trachea. *Surgery*, 1952; **31**: 239-250.
7. Fritz E., Barton Jr. M.D., Thomas, E-Spencer and Steve Byrd H. Head and Neck reconstruction with the latissimus dorsi myocutaneous flap. *Anastomotic observations and report of 60 cases. Plastic and Reconstructive Surgery*, 1983; **71**: 199-204.
8. Brian J.C., Bingham and Maurice R., Hawthorne. *Synopsis of operative E.N.T. Surgery*, first edition, 1992; Butterworth and Heinmann, pp. 329-333.