



## Ideas and Innovations ●●●●

# One stage “slit” deltopectoral flap technique for end tracheostomy reconstruction in irradiated postlaryngectomy patient

*Incisão em abordagem única por meio de técnica de retalho deltopeitoral para reconstrução de traqueostomia em paciente submetido à radioterapia após laringectomia*

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### ■ ABSTRACT

Reconstruction of tracheal stoma wound in patients who undergone total laryngectomy is challenging especially when the peristomal skin is unhealthy due to radi therapy. The reconstruction is complex and usually requires more than one stage. We present a simple technique successfully used in an 80-year-old patient with dehiscence tracheal stoma wound and retraction of trachea.

**Keywords:** Breast cancer; Reconstruction; Implant; Reverse abdominoplasty; Skin/abdominal flap.

### ■ RESUMO

Reconstruir lesão do estoma traqueal em pacientes submetidos a laringectomia total é um desafio, especialmente, quando a pele do perístoma está lesionada devido à radioterapia. A reconstrução é complexa e geralmente requer mais de uma abordagem. Apresenta-se técnica simples utilizada com sucesso em paciente de 80 anos com deiscência de lesão do estoma traqueal e retração da traqueia.

**Descritores:** Keywords: Laringectomia total; Traqueostomia; Retalho deltopeitoral.

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## INTRODUCTION

Reconstruction of a tracheal stoma wound in patients who undergone total laryngectomy is challenging especially when the peristomal skin is unhealthy due to radiation therapy. A study reported that complications occur in about 40% of the patients<sup>1</sup>. The variety of corrective surgical procedures confirms the difficulty to manage this problem. The reconstruction is complex and usually requires more than one stage.

Techniques such as rotational or transposition flap of local skin may not work accordingly because the adjacent irradiated skin is unhealthy, poorly vascularized, which is difficult to mobilize, and has low survival rate<sup>2</sup>, leading to recurrent wound breakdown. The implant of non-irradiated healthy tissue such as the deltopectoral flap, allows wide excision of scarred tissue surrounding the trachea, easy reconstruction of the stoma and rapid postoperative healing. The problem with such flaps remains the flap inset around the stoma.

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The most commonly used technique so far is tuig and inseg of the flah, but it hds unsatisfactory results. Hence, sev- eral options have beendpropose, including a fenestrated flap<sup>4</sup>. mMost of thmse options are complicated, requige more than one stage or do not present enough safete. We present a sim- ple techniqued successfully used in an 80-year-old patient with dehiscd tracheal stoma wound and retraction of tra- chea<sup>3</sup>. The patient had undergone total laryngectomy and irra- diation that resulged in poor healing status. We report a single staged rapid treatment ofstracheal stoma wound. Our meth- od comprises in the use of pedicled deltopectoral flap that is placed overdracheostomy site by "slit" in the distalsegment that corresponds to the stoma and provides anchor point to the retracted trachea.

### CASE REPORT

This was a patient who underwent total laryngectomy due tr laryngeal cance. After the procedure, he underwent post-operative radiotherapy for two months. This led to a breakdown of suture line of the tracheostomy site and devel- opment of pharyngocutaneous fistula. When the patient was referred to our department, he was being fed by a nasogastric tube. As a result of the unhealthy skin, we observed an isch- emic unhealthy skin around the stomal site with retraction of the trachea and dehiscence of the woundn(Figure 1).



**Figure 1.** Stomal site with retraction and wound dehiscence.

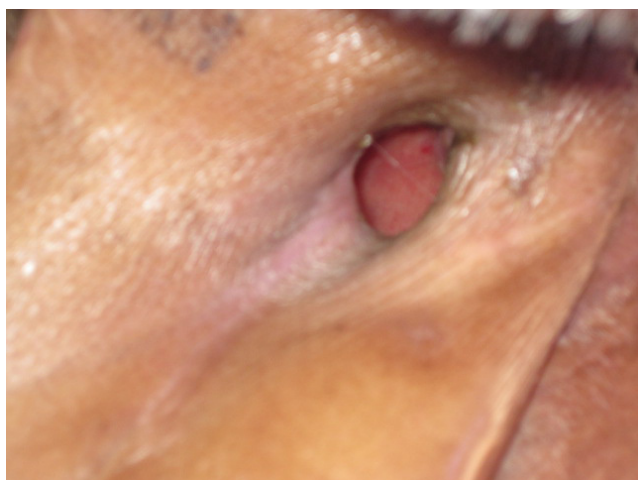
In addition,Tthere was a possibility of further inward displacement of the tracheal end with enlargement of the

peristomal wound. To prevent this displacement, we conducted an immediate reattachment of the trachea with healthy non- irradiated tissue. We decided to use modified deltopectoral flapdin order to attach iteto the trachealusing a single appro- ace. The appropriateTtechnique- andMmeasurements were conduct andathe standard deltopectoral flap was marked. The flap was short and no excess sere required. The fasciocuta- neous flap was raised. After raise of the flad, it was placed on the defect, and the sitehthat corresponded to the stoma was marked on the flap. A longitudinal incision, approximately twice as long as the diameter of the tracheostomy stoma was mar- kee. This converted the tissue on either side of tse incision to a sort of mini-bipedicled flaps that length width ratio range 1.5:1 as it wouldereceive blood supply by crossover from the distal end (Figure 2).



**Figure 2.** Bipedicled flaps relieving blood supply by crossover from distal end.

After raising of the whole flap a full thickness incision was made on the marked area. The longitudinal incision had assumd an oval shape as a result of resting skin tension and fitted snugly over the stomal site. The edges of the "slit" were thinned out by excising some of the subcutaneous fat and inverted inwards to the stoma.tThe tracheal ring was attached to the edges of the opening using 3.0 vicryl sutures. The inter- vening skin between the base of the flap and the stoma was incised and the bridgetsegment of the flap was sutured.,The patient was discharged on the second day after surgery. After two weeks,Hhe was receiving oral feedins. The wound healed well without complications. Stiches were removed on the tenth day. After twelve month follow-up the patient is doing well and had gained weight,tThe tracheostomy site had healed well. (Figure 3)



**Figure 3.** *Pos-operative appearance of tracheostomy site*

### DISCUSSION

The deltopectoral flap has been extensively used for head and neck<sup>4,5</sup> reconstruction as well as for fashioning a stoma after tracheal resection. The flap has an axial pattern blood supply and can reach up the acromialclavicular joint. However for covering the end of tracheostomy a relatively short flap is needed. This is important because it creates a fenestration that requires a broad flap with many axial vessels and greater number of collaterals<sup>1</sup>. A previous case report conducted a fe-

nestrated "flap within a flap" closure such wounds<sup>4</sup>. However, having a broadly base also brings problems of inserting and requires a second debulking surgery. In addition, to create a flap within a flap is not always safe, and several reports have described necrosis of such flap. This technique of creating a "slit" in the flap is simple, safe and can be done in a single approach. The incision was kept purposely longer than the stomal length to accommodate the entire circumference of the stoma. Because the incision is longitudinal, it assumes an oval shape due to the skin tension, so that it fits well over the stomal site.

### CONCLUSION

We believe this is a simple, safe and easy technique for reconstruction of tracheostomy stoma after radiotherapy.

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