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

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. 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, 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 insetting around the stoma.

ABSTRACT

Reconstruction of tracheal stoma wound in patients who undergone total laryngectomy is challenging especially when the peristomal skin is unhealthy due to radiation 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 dehisced 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 peristoma 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: Laringectomia total; Traqueostomia; Retalho deltopectoral.
The most commonly used technique so far is tuig and inseg of the flap, but it has unsatisfactory results. Hence, several options have been proposed, including a fenestrated flap. Most of these options are complicated, requiring more than one stage or do not present enough safety. We present a simple technique successfully used in an 80-year-old patient with dehisced tracheal stoma wound and retraction of trachea. The patient had undergone total laryngectomy and irradiation that resulted in poor healing status. We report a single staged rapid treatment of tracheal stoma wound. Our method comprises the use of pedicled deltopectoral flap that is placed over the tracheostomy site by “slit” in the distal segment that corresponds to the stoma and provides anchor point to the retracted trachea.

CASE REPORT

This was a patient who underwent total laryngectomy due to laryngeal cancer. After the procedure, he underwent post-operative radiotherapy for two months. This led to a breakdown of suture line of the tracheostomy site and development 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 ischemic unhealthy skin around the stomal site with retraction of the trachea and dehiscence of the wound (Figure 1).

In addition, there 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 flap in order to attach it to the trachea using a single approach. The appropriate technique and measurements were conducted and the standard deltopectoral flap was marked. The flap was short and no excess sere required. The fasciocutaneous flap was raised. After raise of the flap, it was placed on the defect, and the site that corresponded to the stoma was marked on the flap. A longitudinal incision, approximately twice as long as the diameter of the tracheostomy stoma, was made. This converted the tissue on either side of the incision to a sort of mini-bipedicled flaps that length width ratio range 1.5:1 as it would receive blood supply by crossover from the distal end (Figure 2).

![Figure 1. Stomal site with retraction and wound dehiscence.](image1.jpg)

![Figure 2. Bipedicled flaps receiving blood supply by crossover from distal end.](image2.jpg)

After raising of the whole flap a full thickness incision was made on the marked area. The longitudinal incision had assumed 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. The tracheal ring was attached to the edges of the opening using 3.0 vicryl sutures. The intervening skin between the base of the flap and the stoma was incised and the bidegment of the flap was sutured. The patient was discharged on the second day after surgery. After two weeks, he was receiving oral feedings. The wound healed well without complications. Stitches were removed on the tenth day. After twelve months follow-up the patient is doing well and had gained weight. The tracheostomy site had healed well. (Figure 3)
DISCUSSION

The deltopectoral flap has been extensively used for head and neck reconstruction as well as for fashioning a stoma after tracheal resection. The flap has an axial pattern blood supply and can reach up to 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. A previous case report conducted a fenestrated ‘flap within a flap’ closure such wounds. 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 ‘sill’ 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 fits well over the stomal site.

CONCLUSION

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

REFERENCES


Corresponding author: Dr. Rahul Shetty MBBS, Christian Medical College, Vellore – 632004. E-mail: rahulplastic@hotmail.com