ABSTRACT
Due to cultural and social pressures, emphasis on cosmesis after thyroidectomy has become an important issue which has led to the emergence of many novel scarless in the neck procedures. However novel procedures have cost issues. Young thyroid surgeons need to be trained in producing an acceptable scar by paying attention to tissue handling and refining techniques of skin closure. As awareness increases patients will demand thyroid surgeons to deal with post thyroidectomy scar. We describe how we deal with the post thyroidectomy scar.

Keywords: Scar, Thyroidectomy, Tissue handling

INTRODUCTION
What was a condemnable procedure, persecuting surgeons doing thyroidectomy as criminals a century ago, has come off age. With advances in asepsis, anesthesia, and hemostasis, thyroidectomy has become a routine surgery. In the modern era, thyroidectomy is safe and has acceptable complication rates, and now patients are concerned about cosmesis. Performing thyroidectomy through a small incision increases the risk of complications. An incision of less than 3 cm is supposed to be associated with good cosmesis and also good quality of life; this differentiates these minimally invasive techniques from traditional techniques. To minimize or negate a scar, many novel techniques have become established (endoscopic thyroidectomy or robotic). However, these techniques have their complications and limitations. A well-performed thyroidectomy with adequate incision can result in good cosmesis with good quality of life and minimal complications.1-4 Patient satisfaction following thyroidectomy has independently correlated with scar length. In this article, we have tried to address the issue of management of scar following open thyroid surgery.

Wound Healing and Scar
It is divided into three main processes inflammation, proliferation and remodeling? Inflammatory phase commences with disruption in capillary blood vessels and induction of hemostatic cascade. The fibrin clot is formed which is composed of fibrin mesh and platelets. Proliferative phase begins around day 4 or 5 with the migration of fibroblasts, and by 2 to 4 weeks fibroblasts are maximally up-regulated and replace the fibrin. Wound contraction begins around day 10 to 12, but timing can be variable. Remodeling phase begins weeks after the tissue injury with decreased fibroblast count, occlusion of blood vessels and hardening of collagen fibers. Continuous production of collagen and degradation affects the wound remodeling and takes place up to 6 months post wound injury. Understanding these three phases, we can try to optimize wound healing. Modifiable factors include incision design, atraumatic handling of tissues during surgery, good hemostasis, aseptic hemostasis, and tension reduction.5 In scar prevention, many factors are involved, but the single most important modifiable factor is wound tension. Langer’s lines and relaxed skin tension lines run parallel to the main collagen bundle in the dermis. If an improper incision is made then the chance of hypertrophic scar is high.

Blood supply is a significant factor in wound healing and areas of the skin with rich blood supply heal with favorable scars5 (Fig. 1).
Management of Post-thyroidectomy Scar?

Preoperative Counselling
Clinical management of scar begins with thorough counselling of the patient by the treating endocrine surgeon, and before any elective surgery patient should be aware of scar formation which can in some instances be excessive [hypertrophic or Keloid (Fig. 2)]. The patient should also be explained the need for oncological clearance in case of malignancy and the need for re-operative surgery in case of indeterminate nodules. Clinical history also includes the history of any scar tendency to injuries in the past. Even some individuals, families, communities have increased scar tendency. Especially, people with darker, thicker and sweaty skins have scar tendency and should be counseled about its possibility and also the subsequent care of scar.

Intraoperative Techniques
An adequate Kocher’s incision 4 to 6 cm along the skin crease after placement of transparent film dressing (Tegaderm) can make the scar acceptable postoperatively by minimizing the skin burns from cautery. The length of the incision depends on the size of the nodule. Asepsis, Absence of tension, an accurate approximation, avoidance of raw surface and atraumatic tissue handling should be employed during the entire procedure. At the end of every wound closure, the endocrine surgeon should remember that the role of the suture is just approximation without tension; collagen and fibroblast heal the wound. If strap muscles are cut then the approximation of strap muscles with absorbable sutures either continuous or interrupted sutures followed by the approximation of platysma with interrupted or continuous absorbable sutures. When closing the transversely divided strap muscles, closure is not completed laterally, leaving a “weep hole” at each margin. The division of strap muscle can provide adequate exposure and to some extent decrease the skin incision length. Some groups do not approximate platysma. The platysma is generally sutured with absorbable suture (Polygactin 3-0) with small bites (0.5 cm) which results in good approximation. The recent randomized control trial of platysma closure vs. no closure concluded that there is less pain when platysma not closed with any difference in cosmesis and wound healing. Once this is done, skin can be approximated with subcuticular absorbable sutures. We then apply adhesive strips (steri-strips), and it is a personal preference of the surgeon to apply ice pack on the wound. A single gauze dressing using surgical tape (micropore plaster) is then applied which is removed on the next morning.

Postoperative Advice
The first few days we look for erythema or inflammation (Fig. 3), and we have the adhesive strip (steri-strips) in place. We clean the wound with saline to maintain its hydration. If non-absorbable sutures are placed then they should be removed at the earliest possible to minimize scar formation. We recommend the patient to have an adhesive strip (steri-strips) placed over the incision for 2 weeks to reduce tension. Then we have a protocol of moisturizing skin cream with vitamin E 1% w/w and aloe vera 10% w/w or silicone gel based ointment which has to be applied daily. One week after incision the tensile strength across the incision is 3% but becomes 20% around 3 weeks when the remodeling begins. Silicon-based cream or silicone gel sheets are believed to decrease the size of the scar by an increase in hydration, oxygen tension and local temperature. After a month we advise the patients gently massage which increases the flexibility of the scar. Massage reduces the pain explained by the gate theory and also promotes vagal activity which results in more relaxation and reduced peripheral vasoconstriction (Algorithm-1).

Fig. 2: Keloid after thyroidectomy
Fig. 3: Erythema postoperatively
CONCLUSION

A well-planned surgery done by an experienced surgeon with due respect to the tissues and an aware patient can lead to good quality scar and life after thyroidectomy.

REFERENCES

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