CASE REPORT

Release of Post Burn Contracture neck under Tumescent Anaesthesia

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ABSTRACT :

Severe post burn contracture(PBC) of the neck poses multiple challenges for the Anaesthesiologist as fixed flexion deformity of the neck makes airway management a challenge. We had a young female with PBC of neck posted for contracture release and split skin grafting. She was managed with tumescent local anaesthesia(TLA), ketamine and propofol infusion. This technique of anaesthesia obviated the need for endotracheal intubation. There were no attributable complications. There was no graft loss and blood loss during surgery was minimal.

INTRODUCTION

Severe post burn contracture of the neck poses a challenge to the Anaesthesiologist. Airway management may be extremely difficult due to the fixed flexion deformity resulting in nonalignment of oral, pharyngeal and laryngeal planes for intubation.[1] Traction forces caused by burn scar contracture may pull and cause insufficient neck extension, incomplete oral occlusion, cicatricial ectropion, and tracheal alterations affecting respiration. This results in difficult intubation that can be life threatening and can result in multiple serious complications and sequelae.[2,3] To circumvent these complications contracture is released initially under local anaesthesia to allow sufficient neck extension and then the Anaesthesiologist intubates the patient. The surgery is then continued under general anaesthesia.[4] This process is inconvenient and contaminates the surgical field as well. In our case endotracheal intubation was avoided and the whole procedure was performed under tumescent local anaesthesia (TLA) supplemented with intravenous propofol infusion.

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CASE REPORT

A 27 year old female patient presented with severe post burn contracture over the neck following burns due a stove burst 3 months back. She was scheduled for contracture release and split skin grafting.

On examination, patient was moderately built and nourished; PR was 82 beats per min, BP 110/70mmHg. Respiratory and cardiovascular systems were normal on examination. There was a fixed flexion deformity of the neck (Picture 1). Mouth opening was adequate with Mallampatti grade IV. Investigation reports – haemoglobin percentage, blood sugar, blood urea, serum creatinine, serum electrolytes and ECG were within normal limits.

Patient was kept nil per oral from 10 pm on the night before the surgery. Ranitidine 150 mg and Alprazolam 0.5mg were given.

On the day of surgery, intravenous line was secured in the left forearm, NIBP, ECG and pulse oximeter were connected. She was premedicated with Ondansetron 4mg, Midazolam 1 mg, Glycopyrrolate 0.2mg, Ketamine 0.5mg/kg, Hydrocortisone 100 mg intravenously. Morphine 3.2mg was given intravenously to prevent pain during tumescent anaesthesia injection. Under strict asceptic precautions a mixture of 30ml 2% lidocaine + 1:200,000 adrenaline, 30ml normal saline, 500U hyaluronidase and 2ml sodium bicarbonate was injected along the line of incision (Picture 2).

Intraoperatively she was maintained on an infusion of Propofol @0.15mg/kg/min. At the time of harvesting of split skin graft from the right thigh Inj. Ketamine 1mg/kg was supplemented intraveously. Patient was maintained on spontaneous respiration throughout the procedure with supplemental oxygen @5litres/min through a face mask. Vitals remained stable throughout. Hydrocortisone 100mg intravenously was repeated at the end of the procedure.

After the procedure, she was conscious, oriented, comfortably sedated, and haemodynamically stable. She was shifted to the surgical post operative ward and monitored. Steroids were continued in tapering doses for 48 hours. Oxygen by nasal cannula was given @4litres/min for 6 hours. Patient was pain free for 6 ½ hours post operatively. She was given Diclofenac 75mg intramuscularly as and when required.

DISCUSSION

Severe post burn contracture(PBC) of the neck poses multiple challenges for the Anaesthesiologist as fixed flexion deformity of the neck makes airway management a challenge. We had a young female with PBC of neck posted for contracture release and split skin grafting. She was managed with tumescent local anaesthesia(TLA), ketamine and propofol infusion. This technique of anaesthesia obviated the need for endotracheal intubation. There were no attributable complications. There was no graft loss and blood loss during surgery was minimal.

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endotracheal intubation. There were no attributable complications. There was no graft loss and blood loss during surgery was minimal.

Post burn contracture of the neck causes functional limitations and anesthetic disfigurements.[5] Serious functional embarrassment necessitates early neck reconstruction. Performing the surgical procedure demands maintenance of airway for a prolonged procedure by orotracheal intubation, which may not be possible to accomplish because of the chin's adherence to the jugulum.[6]

Measurement of the thyromental distance, the Mallampatti score, and the mouth opening (interdental) distance are important clinical assessment data helping to anticipated difficult intubation.[7] Preparation for dealing with difficult intubation is indicated in all patients with scarring in the upper thorax, neck, and face.[8] Suggested options for securing the airway are LMA, fiberoptic laryngoscopy, blind nasal intubation, release of contracture under ketamine and local anaesthesia as well as TLA.[9]

Blind nasal intubation may be successful, but positioning of the head and neck may be severely limited and repeated attempts present the risk of nasal bleeding, which may further endanger the airway. Direct laryngoscopy may be hampered by the presence of limited cervical hyperextension and restricted mobility of the mandible, and bronchoscopy itself can be difficult if the anatomy is distorted owing to soft tissue contracture or if blood and secretions are present.[8]

Use of laryngeal mask airway may be hampered by the anatomical abnormalities described, and airway maintenance may be jeopardised if patient position has to be changed. Translaryngeal techniques employing retrograde guidance with a catheter inserted through the cricothyroid membrane are similarly contraindicated because anatomical reference points are obscured.[8] Initial release of contracture under ketamine and local anaesthesia, followed by endotracheal intubation is inconvenient and contaminates the surgical field.[4]

Tumescent anaesthesia(TLA) is a technique for delivery of local anaesthesia that maximises safety by using pharmacokinetics principles to achieve extensive regional anaesthesia of skin and subcutaneous tissue.[10] This technique has evolved over the past 20 years mainly for use in liposuction. The term "tumescent" is derived from the Greek word "tumidus" which means "swollen".

The subcutaneous infiltration of a large volume of very dilute lidocaine (as low as 0.1%) and epinephrine causes the targeted tissue to become swollen and firm, or tumescent, and permits procedures to be be performed on patients without subjecting them to the inherent risks of local anaesthetic toxicity. The use of very dilute lidocaine allows administration of doses upto 35-55mg/kg.[11] This technique has been safely used for procedures like harvesting skin grafts,[12] liposuction and post burn neck contracture release.[4]

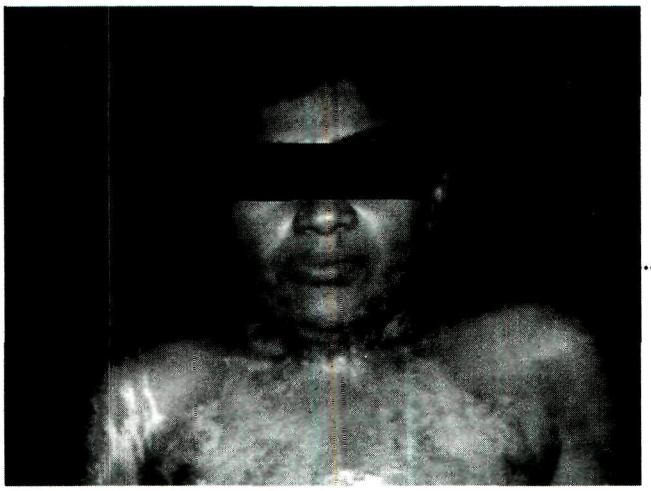
Advantages of this technique are simplicity, prolonged postoperative analgesia, low incidence of bleeding, anaesthetization of a large area of the body, easy dispersability into the scar tissue, hydrodissection of the tissues. The only disadvantage of TLA is a wet surgical field.[4]

In our patient although mouth opening was adequate, LMA placement and use of fiberoptic intubation would have been difficult because of the distorted anatomy. Translaryngeal retrograde technique and blind nasal intubation technique were not used due to the presence of contractures over the neck and to avoid trauma that could have been caused. Hence tumescent local anaesthetic technique was used. The drug was injected along the line of incision required for contracture release after premedication with ketamine and morphine to prevent pain during injection of tumescent anaesthesia. Intraoperatively an infusion of propofol was administered for sedation and a bolus dose of

ketamine was given at the time of graft harvest. Complications of ketamine such as tongue fall, regurgitation and emergence phenomenon were avoided in our case as propofol was used (Picture 3).

CONCLUSION

Use of tumescent local anaesthesia for severe post burn neck contracture is a safe, simple and effective method. This technique has good patient compliance and completely obviates the need for difficult endotracheal intubation. Reduced blood loss and reduced skin graft loss are additional benefits of this technique. It also provides good post operative analgesia and patient compliance.



Picture 1 :
Pre op picture showing PBC, note the limited neck extension

Picture 2 :
Injection of TLA along the line of incision

Picture 3 :
5th post operative day, note the increased neck extension

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