

# The Efficacy of 3% Sodium Tetradecyl Sulphate (STS) Injection in Management of Intraoral Soft Tissue Vascular Lesion

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## ABSTRACT

**Aim:** To evaluate the efficacy of 3% sodium tetradecyl sulphate (STS) in intraoral vascular lesions.

**Methods:** Cross sectional study was done in oral and maxillofacial surgery department of Islam dental college from 1<sup>st</sup> Jan 2020 to 31<sup>st</sup> Dec 2021. 18 cases were selected with non-probability sampling technique. 3% STS solution was intralesional injected. Site and size of lesion, pain intensity, burning sensation, tissue necrosis and area numbness variables were observed on preoperative, 1<sup>st</sup> postop, and then every 14<sup>th</sup> day until lesion subside and findings were documented in Performa.

**Results:** Results were analysed statistically with SPSS version 23. Female 14 cases had predominance with 4 male cases. Mostly common site of lesion was tongue with 7 cases, 4 cases in cheek and 4 cases had involvement of lip area, 3 cases had lesion in the floor of mouth. 11 cases had mild pain, moderate pain in 5 cases and 2 cases with severe pain. 14 cases had burning sensation and 7 cases had tissue necrosis with area numbness.

**Conclusion:** 3% Sodium tetradecylsulphate sclerosing agent usage is safe, cost effective and efficient to manage intraoral soft tissue vascular lesion. Although further studies are needed on large sampling data with longer follow-up.

**Keywords:** Sodium tetradecyl sulphate, vascular lesion, haemangioma, sclerotherapy.

## INTRODUCTION

Vascular lesions are the most common oral and maxillofacial lesions. Mostly vascular lesions are classified on a histological basis like arterial, venous and capillary. The vascular lesion can also be categorised into high and low flow according to its hemodynamic nature<sup>1</sup>. However, clinician and pathologist also differentiate the vascular lesion based on history and clinical features. The most common intra-oral sites of lesion are lip, cheek, tongue and buccal mucosa<sup>2</sup>. Lesions can be treated with enucleation, resection, selective embolization, laser therapy, cryotherapy and with medicines like beta blocker, intralesional injections of different sclerosing agents or steroids are also used<sup>3</sup>. All treatment options have their advantages and disadvantages.

However, most cost effective, conservative treatment option is intralesional injections of 3% STS with minimal number of complications<sup>4</sup>. Sclerotherapy with STS is used to reduce the size of lesion by fibrosis. Agents directly changed vascular endothelium by different mechanisms. Sclerotherapy induces inflammation and thrombosis of the lesion leading to fibrosis and shrinkage<sup>5</sup>. STS has high level of safety and efficacy. Postoperative pain, burning sensation, anaphylactic reaction, tissue necrosis, and sloughing are the most common complication<sup>6,7</sup>.

The objective of the study was to evaluate the efficacy of 3% sodium tetradecyl sulphate (STS) in intraoral vascular lesions.

## MATERIAL AND METHODS

Cross sectional study was done in the department of oral and maxillofacial surgery, Islam dental college from 1<sup>st</sup> Jan 2020 to 31<sup>st</sup> Dec 2021. 18 cases were selected with non-probability sampling technique after approval of ethical review committee of Islam dental college. Complete history with through clinical findings of all cases were documented to diagnose. Vital signs were monitored and necessary lab investigation were reviewed. Treatment plan was explained in detail and Verbal consent were signed. Verbal analogue pain scale<sup>8</sup> was explained to the patient. (0 with no pain, 1-3 mild pain, 4-7 moderate pain, 8-10 severe pain). 2% lignocaine with adrenaline 100000 IU was used to

anesthetise the area. 0.5ml 3% sodium tetradecyl sulphate (STS) injection was infiltrated intralesional with insulin syringe. Following variables site, size of lesion, pain scale, burning sensation, tissue necrosis and area numbness findings were documented in proforma upon 1<sup>st</sup> postop day then after every 14 days until lesion completely disappear. Mostly two doses were sufficient to manage the cases, except 4 cases where 5 doses of 3% STS injected to regress the lesion.

## RESULTS

Mean age was 20.1 years. 14(77.7%) cases were female and 4(22.2%) cases were male. Average size of lesion was 2.85cm. 7(38.8%) cases have lesion on the tongue surface, 4(22.2%) cases have lesion on the cheek area, 3(16.6%) cases have lesion on the floor of mouth and 4(22.2%) cases have lesion in the anterior vestibule and lip area. 11(61.1%) cases have mild pain, 5(27.7%) cases have moderate pain while 2(11.1%) cases have severe pain. Mostly pain was complained immediately after injection of STS, that was controlled with tab Naproxen sodium 550 mg every 12 hours for 3 days only. Size of all the lesions were significantly reduced gradually in size. 14(77.7%) cases had burning sensation that was gradually reduced within 2 days. Tissue necrosis and area numbness complaint was noticed in 7(38.8%) cases, that area was healed successfully without any intervention. All cases are still under follow up.

## DISCUSSION

In our study, mean age of patients was 20.1 years as compared to Xena Alakailly et.al study<sup>1</sup> conducted in Baghdad was 18.2 years. Lesions were more common in 14 (77.7%) females than 4(22.2%) male. Mcheik et al study reported 23 girls and 8 boys in France. Bonet-Coloma et al has published Literature review, retrospective cohort (chart review) study that shows 19 girls and 9 boys. Weiss et al had published retrospective cohort study, that was conducted in Israel mentioned 39 girls and 17 boys. Average size of lesion in 18 cases was 2.85cm in our study as compared to Xena et al. study, reported 3.2 cm average size in 13 patients.

In our study, most common site of the lesion was dorsum side of tongue with 7 cases, 4 in cheek area, 4 cases had lip lesion and 3 cases were reported lesion in the floor of mouth.

Received on 17-04-2022

Accepted on 28-08-2022

Xena Alakailly et al<sup>9</sup> used 3% STS on 13 patients and reported mild pain with oedema that was controlled with oral analgesic and intramuscular injection of dexamethasone. In our study 11 cases had mild pain, 5 with moderate pain and 2 have severe pain that was managed with tab naproxen sodium 550mg every 12 hours for 3 days and successfully managed. Xena Alakailly et al<sup>9</sup> study reported 11.76% patients had superficial ulcerations that was healed uneventfully and 5.88% patient had ecchymosis. But in our study, no superficial ulceration or ecchymosis complication seen but 7 cases had tissue necrosis and area numbness that was healed and completely recovery within week. Systematic review and meta-analysis conducted on sclerotherapy for venous malformation of head and neck area by Lucio et al<sup>5</sup> in department of neurosurgery in USA in 2020. Review included 37 studies with total 2067 patients that had used bleomycin, ethanol, sodium tetradecyl sulphate (STS), ethanalamine and pingyangmycin agents for sclerotherapy<sup>5,10</sup>. Study had lowest complete cure rate at 55.5%(95% CI, 36.1-74.9%)as compared to pingyangmycin with highest cure rate 82.9% (95% CI, 71.1–94.7%) but in our study all 18 cases were recovered 100% with 3% STS injection successfully.

Lucio et al<sup>5</sup> did Systemic review and mentioned pain oedema, ecchymosis and nerve injury after using 3% STS. As compared to our study, mild pain in 11 cases, 5 with moderate pain and 2 cases had severe pain. Although further studies are required on large sample size to compare systemic reviews.

Khandpur S<sup>11</sup> had also assessed 3% efficacy of STS in venous and lymphatic malformation on 13 patients. 90-100% lesion was regressed after mean of four injections with no involvement in two cases. Complication were blister formation, erosion and scarring<sup>9,12</sup>. But in our 18 cases, 14 cases have burning sensation that resolves within days without any therapy and 7 cases have tissue necrosis with area numbness only. Singal A et al had used 3% STS on the dorsum of tongue left side. 0.3-0.4ml STS solution was intralesional injected with insulin syringe<sup>9</sup>. Two such injections at 3 weeks interval led to complete resolution of the lesion. In our study we successfully used 2 intralesional injection with 14 days interval and similarly results were remarkable with complete regress of lesion except 4 cases where 5 doses of 3% STS injected to regress the lesion. Joana et al has reported about the efficacy of the Nd:YAG Laser in the treatment of vascular malformations of the face and neck. Laser is very good option for the treatment of vascular lesions in the tongue, being a safe, easy, and effective procedure with short downtime and an excellent maintenance of the lingual tissue, especially in thick or nodular lesions<sup>13</sup>, although Nd:YAG laser facility is not available in all

centre and is expensive than 3% STS use as sclerotherapy to manage intraoral vascular lesions.

## CONCLUSION

Soft tissue intra oral vascular lesions can be treated effectively with intralesional injection of 3% STS without any significant complication. However further studies are needed on large sampling scale with longer follow up for conclusive results.

**Conflict of interest:** Nil

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