

Role of Tetracycline in Management of Seroma Post-operative in Native Access for Hemodialysis, Post Appendicectomy and Post Mastectomy

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ABSTRACT

Background: Seroma is a frequent surgical complication. Complications include compression of other tissues, infection, and abscesses. Patients with mastectomy, appendicectomy and native access had 4.3%-63% seromas. Seroma commonly occurs after lymphatic channel injury. Tetracycline (TCN) is an antibiotic used to treat illnesses such as acne, cholera, brucellosis, plague, malaria, and syphilis. It is an effective topical sclerosing agent.

Objective: The present study aimed to determine the role of tetracycline in management of post-operative seroma in native access for haemodialysis, post-appendicectomy and post-mastectomy.

Methods: This was a prospective cross-sectional study conducted on 104 patients with post-operative seroma at Minya University Hospital and The Good Shepherd Hospital. All patients provided their demographic information. Locally administered tetracycline to a wound. The patients were monitored for post-operative wound problems and seroma healing.

Results: Native access patients were 44. Mean age was 45.59 ± 16.75 years. 47.7% were females and 52.3% were males. Diabetes prevalence reached 68.2% and HTN prevalence reached 56.8%. Post-appendicectomy patients were 29. Mean Age was 28.5 ± 7.53 years. 41% were females and 46% were males. 33% of patients had diabetes. Appendicular abscess was recognized in 36% of patients. Post-mastectomy patients were 30. Mean age was 56.6 ± 9.49 years. 96.67% were females. 50% of participants had diabetes.

Conclusion: Tetracycline was effective in seroma treatment in most patients with complete improvement in less than 10 days. Only post-mastectomy patients that showed resolve days more than other patients.

Key words: Appendicectomy, Mastectomy, Seroma, Native access, Tetracycline.

INTRODUCTION

One of the most common surgical consequences is seroma. This complication is related with morbidity due to seroma accumulation and pressing on other tissues, as well as the likelihood of infection and abscesses ⁽¹⁾. Seroma may need surgical procedures such as aspiration or draining, and patients may be required to return to the operating room ⁽²⁾.

Many factors contribute to the formation of seromas, including damage to blood vessels and lymphatic channels, which eventually accumulate in the empty spaces left by surgery, trauma, shear pressures and tissue adhesions. Sclerotherapy, which involves injecting sclerotic material into the dead space to produce inflammation and a fibrotic reaction that fills the dead space, has been used in the literature ⁽³⁾.

Seromas occur in 4.3% to 63% of patients after native access for hemodialysis, appendectomy and mastectomy. Although postoperative seromas generally resolve with repeated aspiration, they are a source of great annoyance and concern to patients ⁽⁴⁾.

Tetracycline (TCN), an antibiotic in the tetracycline family of medications, is used to treat a number of infections, including acne, cholera, brucellosis, plague, malaria, and syphilis. It was found to be an efficient topical sclerosing agent ⁽⁵⁾.

The present study aimed to determine the role of tetracycline in management of post-operative seroma in native access for hemodialysis, post-appendicectomy and post-mastectomy.

MATERIAL AND METHODS

This was a prospective cross-sectional study done in Minya University Hospital and The Good shepherd Hospital. The study was conducted on 104 patients suffering from post-operative seroma.

Exclusion criteria: Pregnant or lactating patients, known sensitivity to TCN, history of keloid formation and immediate breast reconstruction.

In native access for hemodialysis and appendicectomy, once seroma was observed opening of one stitch was done and tetracycline was applied in the wound. In mastectomy 50 ml of TCN solution (1 g in 50 ml 0.9% NaCl) were instilled through each of the 2 drains. Patients were followed up for recovery from seroma, post-operative pain and wound complications.

Ethical considerations:

The study was approved by the Faculty's Ethics Committee, Minia University. All the patients were informed about the surgery and the auto transplantation technique, value and possible complications. Informed written consent was taken from every patients. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Statistical analysis:

IBM SPSS version 22.0 was used to analyse computer-generated data. To express quantitative data, percentages and numbers were employed. No comparison tests used.

RESULTS

Native access patients were 44. Mean age was 45.59 ± 16.75 years. 47.7% were females and 52.3% were males. Diabetes prevalence reached 68.2% and HTN prevalence reached 56.8%. Improvement (Results) happen after mean of 2.86 ± 1.96 days after the operation (Table 1).

Table (1): Native access patient's characteristics

Parameter	Value (n=44)
Age (Years)	45.59 ± 16.75
Gender	
Female	21 (47.7%)
Male	23 (52.3%)
Diabetes	30 (68.2%)
HTN	25 (56.8%)
Results (days)	2.86 ± 1.96

HTN: Hypertension

Data represented as Mean ± SD & Number (Percentage)
 Post-appendicectomy patients were 29. Mean age was 28.5 ± 17.53 years. 41% were females and 46% were males. 33% of patients had diabetes. Appendicular abscess was recognized in 36% of patients. Improvement (Results) happened after mean of 8.62 ± 2.31 days after the operation (Table 2).

Table (2): Post Appendicectomy patient's characteristics

Parameter	Value (n=29)
Age (Years)	28.5 ± 17.53
Gender	
Female	12 (41%)
Male	17 (46%)
Diabetes	4 (33%)
Appendicular Abscess	7 (36%)
Results (Days)	8.62 ± 2.31

Data represented as Mean ± SD or, Number (Percentage)

Post-mastectomy patients were 30. Mean age was 56.6 ± 9.49 years. 96.67% were females. 50% of participants had diabetes. Seroma improvement in days reached mean of 19.03 ± 4.01 (Table 3).

Table (3): Post mastectomy patients characteristics.

Parameter	Value (n=30)
Age (Years)	56.6 (9.49)
Gender	
Female	29 (96.67%)
Male	1 (3.33%)
Diabetes	15 (50%)
Results (Days)	19.03 (4.01)

Data represented as Mean ± SD & Number (Percentage)



Seroma post AVshunt



Tetracyclin application



Seroma post appendicectomy



Tetracyclin application



Healing of seroma

DISCUSSION

In our research we studied seroma improvement under the effect of tetracycline. We studied AV native access patients, post-appendicectomy patients and post-mastectomy patients complicated with seroma. Seroma appears in many A-V shunt patients and cause major complications as pressure upon shunt and thrombosis. Seroma may cause access failure and abscess formation. It also may cause wound dehiscence (6, 7). All these complications affect the shunt which is a lifesaving operation for hemodialysis patient, so rapid management of seroma is important.

In our study, improvement (Results) happened after a mean of 2.86 ± 1.96 days after the operation. This gives rapid improvement with minimal complications among patients. Although seroma may show spontaneous remission, it usually lasts for 3-4 weeks causing fluid accumulation and continuous leakage from operation wound (8).

Post-appendicectomy patients were 29. Mean age was 28.5 ± 17.53 years. 41% were females and 46% were males. 33% of patients had diabetes. Appendicular abscess was recognized in 36% of patients. Limited data upon post-appendicectomy seroma formation was found and there was no study that demonstrate tetracycline effectiveness in post-appendicectomy patients complicated with seroma formation. Appendicectomy seroma cause fear of operation failure. Seroma post-appendicectomy studied by **Andrade *et al.***⁽⁹⁾ and found that it started to appear after 7- 10 days. Infection starts to happen upon seroma and lead to ugly scar formation.

In our study tetracycline was effective as mean start was 3.62 days after seroma formation and resolved after a mean of 8.62 days of the operation. Start of the treatment ranged between 3 and 5 days. Most cases resolved after 7 to 8 days. Improvement days ranged between 7 and 15 days after the operation. Mean improvement duration reached 5 ± 2.3 days. Medication with tetracycline caused fibrosis and sclerosis at wound place and healed rapidly.

Post-mastectomy patients were 30. Mean age was 56.6 ± 9.49 years. 96.67% were females. 50% of participants had diabetes. Seroma improvement in days reached mean of 19.03 ± 4.01 . Mean treatment duration reached 10.93 ± 3.95 days. Along with our results, **Abdelaziz & Habashy**,⁽¹⁰⁾ reported mean age as 43.2 ± 6.8 years. Duration after mastectomy was reported to be 11.3 ± 4.1 days. **Rice *et al.***⁽¹¹⁾ reported that topical tetracycline was not effective at preventing post-mastectomy wound seroma. Seroma formation 2 weeks postoperatively was greater in the tetracycline group than the control group (53% vs. 22%, P 4 0.01). There were no differences between groups regarding the degree of postoperative pain, wound infection, or seroma formation 1 month postoperatively.

CONCLUSIONS

Tetracycline was found to be effective in seroma treatment in most patients with complete improvement in less than 10 days. Only post-mastectomy patients resolve days was more than other patients.

Declarations:

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