

## Original Research Article

# Is antibiotic prophylaxis really needed in thyroid surgery?

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### ABSTRACT

**Background:** Thyroid surgery is considered under clean surgical procedures and antibiotics are not routinely recommended for such clean surgical procedures. However, many hospitals in India still give post-operative antibiotics to thyroidectomy patients. Our aim was to find out if administering antibiotics in thyroid surgeries really helpful?

**Methods:** A retrospective study was conducted for a period of one year with total number of 30 participants, 15 of which were given antibiotic prophylaxis and remaining 15 weren't given. The patients were observed for signs of infection and hence need for antibiotics till one month postoperatively.

**Results:** None of the patients in both the groups with and without antibiotics developed post-operative surgical site infection necessitating the need for antibiotics.

**Conclusions:** Thyroid surgery being classified as clean surgical procedure with small incision and short duration and given that strict aseptic precautions are followed in surgery, then antibiotic prophylaxis may not be needed. However, our study should be considered as only a preliminary case control study and a larger prolonged study is needed to provide statistically significant data.

**Keywords:** Thyroidectomy, Antibiotic prophylaxis, Surgical site infection, Wound infection

### INTRODUCTION

Thyroid surgery is one of the commonly performed surgeries, but also is the more common practice of administering antibiotics to patients undergoing thyroid surgery. But is it really needed? According to the increasing risk of bacterial contamination and infection, the various surgical procedures are clean surgical procedures (risk of infections <5%), clean contaminated surgical procedures (risk of infections <10%), contaminated surgical procedures (risk of infections about 20%), dirty surgical procedures (risk of infections about 40%).<sup>1</sup>

Procedures in which there is a low risk of wound infection prior to surgery; during surgical procedure,

sterility is maintained of the wound, after the surgical wound is closed and medicated it is never again exposed to direct contact with bacteria flora qualify as clean surgical procedures. Thyroid surgeries are considered under clean surgical procedures and antibiotics are not routinely recommended for such clean surgical procedure.<sup>2,3</sup> However, many hospitals in India still continue the practice of giving post-operative antibiotics to thyroidectomy patients. Such unreasonable use of antibiotics in clean surgical procedures results in unwanted drug resistance and also increases financial burden on the hospital and community and hence a great deal of caution is necessary for antibiotic usage. Nevertheless, published data from one study report 40% rate of inappropriate antibiotic administration in clean head and neck surgeries.<sup>4</sup>

The objective of our study was to conclude if antibiotics are really needed in thyroid surgery as previously given and not administering them increases the chance of infection?

**METHODS**

This study was conducted in Bharatratna Dr. Babasaheb Ambedkar hospital, which is a Municipal Peripheral hospital in Mumbai mainly lower socioeconomic strata of society. This study was conducted from January 2019 till December 2019 for a period of one year. An ethical approval was taken from Medical Superintendent of the Hospital. A total of 30 patients were included in this study. 15 patients were given postoperative antibiotics and 15 patients were not given postoperative antibiotics. The average surgical time was around 100 to 110 minutes. The various inclusion and exclusion criteria were as follows:

**Inclusion criteria**

Men and women between age 18-80 years, absence of any systemic disease, preoperative absence of any infection, revision cases were included.

**Exclusion criteria**

Patients undergoing any immunosuppressive or corticosteroid treatment; patients undergoing thyroidectomy for locally advanced tumours, patients with concomitant neoplasms were excluded.

**Procedure**

All patients were administered general anaesthesia. Disinfection was done with cetavlon and spirit. Povidone iodine was avoided so as to avoid false positive report on post-operative radioiodine scan if needed. Kocher’s incision used and sub-platysmal flaps elevated. Hemi or total thyroidectomy was performed. A suction drain was routinely kept in all patients. The wound was covered with antibiotic ointment and no dressing was applied. The patients were routinely discharged on 3-4<sup>th</sup> postoperative day. Daily cleaning of the wound was done.

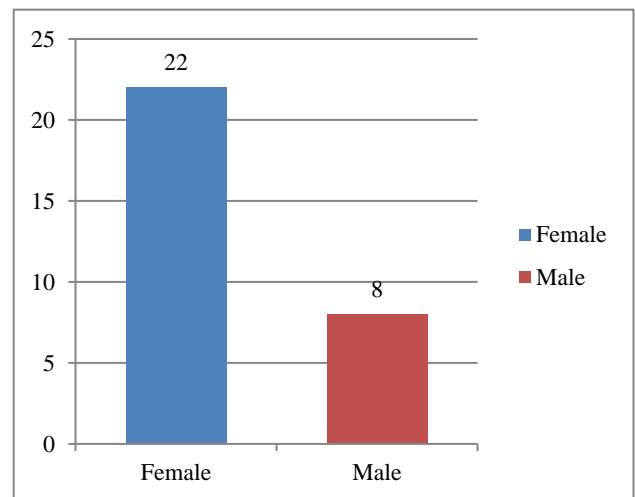
**Follow up**

Patients were followed up after 7, 14 and 28 days post operatively and the wound was examined for redness, swelling, tenderness, purulent discharge and any complaints of dyspnoea, pain and discharge were noted. The histopathology report was also noted. Statistical method of paired t test was applied to analyse the data.

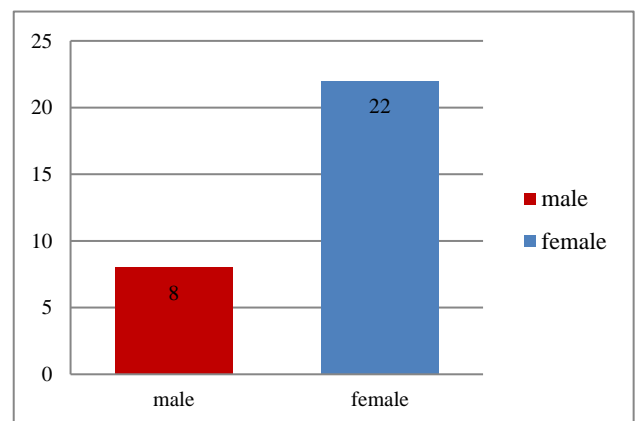
**RESULTS**

This study was conducted in Bharatratna Dr. Babasaheb Ambedkar Hospital, Mumbai for a period of one year from November 2018 till October 2019. A total of 30

patients were admitted and posted for thyroidectomy, the first 15 patients were given antibiotic prophylaxis with cephalosporin or penicillin with beta lactamase inhibitors and the other 15 patients were not given any antibiotic prophylaxis. Out of 30 patients, 22 patients were females and 8 patients were male giving us the ratio of 2.7:1 of female:male. The age group of the patients was between 19 to 70 years, the most common age group being between 30 to 40 years of age. 22 patients underwent hemi thyroidectomy, out of which one patient underwent completion thyroidectomy within 10 days of hemi thyroidectomy, whereas 8 patients underwent total thyroidectomy. The mean time of surgery was approximately 100 to 110 minutes. All patients were followed up weekly for four weeks post surgery after discharge. Secondary haemorrhage was not observed in any of the patients of both the groups. Out of the patients treated with antibiotics, none of the patient had any post-operative infection. In the group of patients not treated with any antibiotics, none of the patients had any post-operative infection. Paired t test was applied, however there was no statistical difference in the results of both tests, hence ‘p value’ is not significant.



**Figure 1: Sex ratio.**



**Figure 2: Sex patient.**

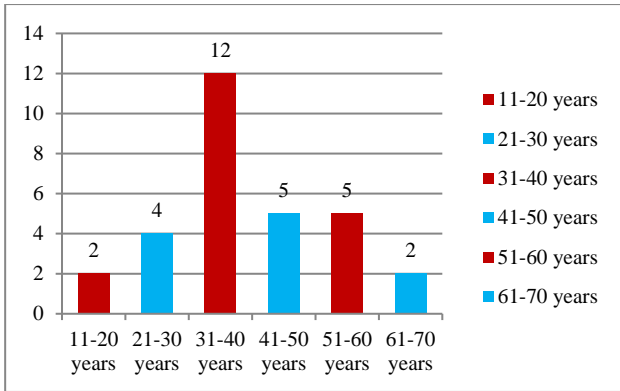


Figure 3: Age group.

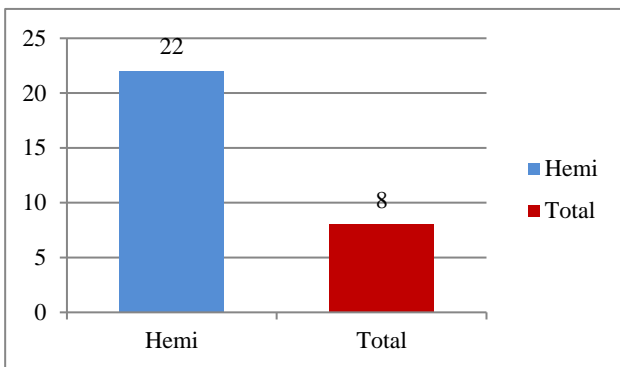


Figure 4: Type of thyroidectomy.

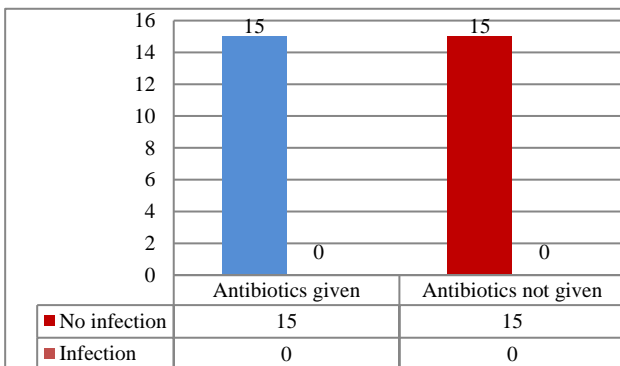


Figure 5: Results of antibiotic prophylaxis vs no antibiotics.

## DISCUSSION

Post-operative surgical site infection is one of the important post-operative complications in any surgery. To prevent this, most hospitals in India give perioperative antibiotics to patients. Even in case of thyroidectomy, many hospitals give antibiotic prophylaxis to patients, in spite of it being a clean surgery, due to undue fear of infection. Thus, the question is have we been fooling ourselves in believing that antibiotic prophylaxis is necessary in clean surgeries like thyroidectomy to prevent post-operative surgical site infection?

Our study denies so. The benefits of non-antibiotic prophylaxis are supported by clinical evidence. The results state that antibiotic prophylaxis is not necessary for thyroidectomy surgeries. Our institution serves people who commonly belong to below poverty line community who do not have proper cleanliness and hygiene in their house and surroundings, still none of the patients have shown surgical site infection postoperatively after discharge needing antibiotics. This also proves that one of the most important things to prevent surgical site infection is strict aseptic precautions during surgery.

A study conducted by Quan Quin in China has similar results and concludes that antibiotic prophylaxis is not necessary in thyroidectomy procedure if aseptic precautions during surgery are maintained.<sup>5</sup> Studies conducted by Nicola Avenia consisting of 500 participants have similar results.<sup>6</sup> A comprehensive review of literature done by Nicola Fachinetti on antibiotic prophylaxis in thyroid surgery states similar results.<sup>7</sup> A similar study conducted by Kwan Bum Lee in Korea consisting of 1895 participants did not have significant percentage of surgical site infection in thyroidectomy patients who were not given any antibiotic prophylaxis which is similar to our results.<sup>8</sup>

## CONCLUSION

Thyroid surgery being classified as clean surgical procedure with small incision and short duration and given that strict aseptic precautions are followed in surgery, than antibiotic prophylaxis may not be needed. However, our study should be considered as only a preliminary case control study and a larger prolonged study is needed to provide statistically significant data.

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