

Evaluation of Drains versus no Drains in Minor Oral Surgery -An Original Research

Dr. M.Rajmohan¹, Dr. V R CHANDRA BABU PAMIDI², Dr. Lakshmi Vineela Yenikepati³, Dr. Manoja Kanchumarthi⁴, Dr. Akash Gupta⁵,
Dr. Jyoti Mallanagouda Biradar⁶

1. M.D.S., Associate Professor, Department of Dental Surgery, KAPV Government Medical College and Hospital, Trichy, Tamilnadu. omfsraj@gmail.com
2. Professor, Dept of OMFS, GSL Dental College, RAJAHMUNDRY, Andhra Pradesh, India. drravichandra11@gmail.com
3. BDS, MS, Rutgers biomedical and health sciences ,Newark, New Jersey, USA. vineela.yenikepati@gmail.com
4. BDS, MS, School of Graduate Studies- Rutgers University, New Burnswick, New Jersey, USA. dr.manoja.k@gmail.com
5. MDS, Consultant Oral and maxillofacial surgeon, turbhe ,plot no. 254, 1 st floor ,sector -22 , opp. Shree Pharma solutions, navi mumbai. aakashgupta1793@gmail.com
6. Associate professor, Department of Oral and maxillofacial surgery, Bharati vidya peeth deemed to be university dental college and Hospital. Sangli Maharashtra. drjyotibiradar04@gmail.com

Corresponding Author: Dr M.Rajmohan, M.D.S., Associate Professor, Department of Dental Surgery, KAPV Government Medical College and Hospital, Trichy, Tamilnadu. omfsraj@gmail.com

Abstract

Introduction: The various minor oral surgical procedures performed are mostly related to the dental and the facial structures and the related trauma and infections. Drains are used in majority of the minor surgical procedures where there may be a necessity to flush the area after surgeries. Hence in this study we intend to assess retrospectively the type of drain and length of hospital stay in patients who have endured minor oral surgical procedures.

Materials and Methods: The data was collected from the hospital charts, retrospectively categorizing patients who had minor oral surgical procedures, at the Oral and Maxillofacial Surgery department between December 31, 2015- December 2020. The data was analyzed and organized as age, gender, days hospitalized, drain type, total drains used. The data was analyzed using appropriate statistics keeping $p < 0.05$ as significant.

Results: The total number of the patients included were 304. 59.5% were treated with non-irrigating drains. Others were treated using irrigating drain alone, or in combination with non-irrigating drains. The mean age was 34.6 years; 34.8% were female. The mean hospitalization was 5.70 days. The length of stay was effected by: area of infection and number of drains placed. The type of drain used did not significantly impact hospitalization.

Conclusion: We conclude that there was no relation between the drain used and the hospitalization. We can propose that the days for the hospitalization are more related to the site and severity of infection.

Keywords: Drains, Minor oral surgery, Retrospective study

Introduction

Maxillofacial pathologies are chiefly associated with the dental disease and maxillofacial trauma.¹ Much has changed in the recent times in the treatment of maxillofacial pathologies from the time von Ludwig first stated process of the disease in most of the infections being from the dental infections.^{2,3} It was by the invention of the antibiotics that the death rate has been brought down.⁴ The same has been seen in the dental and maxillofacial pathologies with reference to the mortality.⁵ Generally the oral and maxillofacial infection severity are dependent on the socio-economic status of the patient, availability of the medical services.^{1,6} The patient with these pathologies are surgically treated, hospitalized, medication given based on the type of the infection and the site of the surgery.^{7,8} Patient is discharged once the clinical conditions improve.⁹ The drains are usually placed when the surgical procedures are performed, and it is removed at the time of the discharge. Usually two types of the drains are used irrigating and non-irrigating. There are many studies that have studied the various factors for the number of days for the hospitalization. Very few have stated the drain and the hospitalization and also they were inconclusive. Hence in this study we intend to find the association between the drain and the hospital stay in those who have undergone minor oral surgical procedures.

Materials and methods

We collected the data from the department of oral and maxillofacial surgery at our college for the patients admitted for the minor oral surgical procedures previously. Ethics approval was obtained for the study. The study period considered was from December 31, 2015- December 2020, five years. We included exclusively those patients who had minor oral surgical procedures and required a hospital stay of one day. We finalized 304 patients for the final study. The criteria for the inclusion were- minor oral surgical procedures, surgery with the transcutaneous approach with drain placement, the incision and drainage must have been completed by an Oral and Maxillofacial surgeon, age of 14 -80. We excluded those patients with the incomplete data and medically compromised other co-morbidities that might influence the outcome. The following variables were collected from the chart and noted on the excel sheet. They are Age, gender, Length of Stay, Type of drain, Number of Drains, Site of infection, Social history/medical history. The drains that are used in the study are -1) Penrose drains alone 2) Robinson drain alone 3) Penrose and Robinson placed in combination. They were also categorized as 1) Non-irrigating- (Penrose drain alone) 2) Irrigation present- includes all modalities that are irrigated. (Robinson drain alone, Penrose and Robinson combination) Statistical analysis was done using the SPSS version20. Comparisons were made using the ANOVA keeping the p value less than 0.05 as significant.

Results

The distribution of the variables was finalized for 304 patients. Days in hospital was calculated from the admission to the discharge day. We observed that the mean days at the hospital were 5.70 days, SD= 2.53 days. The maximum stay was 20 days and the minimum was 1 day. All the patients received drains after the surgery. We observed that in 181 patients (59.5%) received non-irrigating (Penrose) drains; 33 patients (10.8%) received irrigating drains alone; 90 patients

(29.6%) had a combination of both irrigating and non-irrigating drains. With reference to the specific drainage type the mean length of stay - Robinson only = 5.45 days, Penrose only = 5.24 days, Penrose and Robinson combinations: 6.73 days. With reference to the group, Mean length of stay was also calculated for drainage by group- Non-irrigating (Penrose alone)= 5.24 days, Irrigation present (Robinson alone, Penrose/Robinson combination)= 6.39 days. We observed that there was no significant difference noted between patients with irrigation versus non-irrigation drains ($p=0.088$). TABLE-1 We noted that the mean age was 34.65 years with the oldest being 80 years and the youngest at 16 years. We noted that age was not a significant factor in length of hospital stay ($p=0.1029$). Total number of drains was ascertained from the dictated operative report. This variable was found to be significant in all models ($p<0.0001$). The mean number of drains placed was 2.5 drains per patient with a standard deviation of 1.77 drains. Patient gender was obtained from the electronic medical record. Males were far more likely than females to have minor oral surgeries and made up 65.1% or 198 patients, while females accounted for just 106 patients (34.8%) in the study. The gender of the patient was not significant ($p=0.8758$) and did not contribute to the length of stay. The positive results of variables with a significant impact on length of stay include total number of drains and site of infection as shown in Table 2.

Table 1. Variables and their Percentage.

Drain Type	N=	%	p
Both	90	29.6%	
Irrigation	33	10.9%	
Non-irrigating	181	59.5%	
Age	34.65	11.55	$p=0.1029$
GENDER	M:F	198:106	$p=0.8758$
Length of Stay			
Both	6.73	3.35	$p=0.088$
Irrigation	5.24	1.99	
Non-irrigating	5.45	1.68	
Number Of Drains	2.5	SD=1.77	$p<0.0001$

Table 2. ANOVA(reduced form) comparing the site and the length of stay to the drains

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Total	1	374.58186	374.5819	78.2753	<.0001*
Site	1	59.69350	59.6935	12.4740	0.0005*
Error	301	1440.4176	4.785		
Corrected Total	303	1945.3553			

Discussion

Days in the hospital have become a significant factor in efforts to decrease the price of healthcare. It is expected that lowering days in the hospital will result in the cost savings. It becomes of even superior interest in patients with maxillofacial trauma and dental infections, as the etiology is possibly a preventable condition. Moreover many patients with this condition seek medical care through the emergency room of government funded hospitals.^{1,6,9-12} Regrettably lowering hospitalization may not have the anticipated impact that healthcare administrators are considering for.¹³ A current study studied hospital stays in a major academic center of 12,365 patients with admissions nearly 4 /day and reported that 40% of all costs are acquired during the first 3 days of admittance.²¹ In the same study it is reported that by reducing the hospitalization by just a day lowered the final cost of care on average by just 3% or less.²¹ One could reason that the patients in the current study fit this summary; as the bulk of all procedures, consultations, blood draws and imaging studies are completed within the first 24 hours of admission. After completion of surgical intervention and stabilization of the patient, the continuing hospital stay typically includes parenteral antimicrobial therapy and daily re- evaluations, anticipating resolution of the infection. The rationale for accomplishment of this study is not to offer a cost basis for hospitalization but rather to determine if there are procedures that may develop or speed up recovery in patients with severe infections.¹⁵⁻²⁰ If judgments made at the time of surgery mark the final outcome at the end of a patient's hospital stay, and possibly return them to a state of health sooner, then these judgments should be searched. In the study of Flynn et al¹⁰ they discussed surgical intervention with placement of either a Penrose drain or a Jackson Pratt drain. No difference was noted between them and no record of drain type is included in the statistical data presented. Peters et al¹⁴ concluded that of all variables examined, length of stay is best predicted on the basis of underlying medical conditions and location of the infection. Most of our observations were comparable to other studies of similar design for the same variables studied. Age and gender had no significant impact on hospitalization in the current study and were not significant variables in any studies reviewed.^{11,12} The positive finding that severity of infection rises hospitalization was expected. The site of the infection is an significant clinical factor in the administration of infections.²³ This finding is similarly observed with many other previous studies.^{9,14,23,24} Almost all studies that studied health status presented that the general health of a patient significantly impacted outcomes.^{5,6,9,14,22} A search was completed using diagnosis and procedure codes for minor oral surgical procedures infections and yielded no new patients. An extra source of error is that data accumulated in a retrospective study is greatly subjective on the accuracy of the medical record. It may be assumed that underrepresentation may be ancillary to underreporting in the medical record. Further studies would be prudent before definitively concluding that patient health has no impact on length of hospital stay. The second part of the study was the type of the drain and its impact on the hospitalization. Pragmatic thinking would clue one to consider that removing bacteria frequently from an infected wound would fasten recovery. However this was not observed in our study. We observed no significant

statistical difference among patients who received irrigating or non-irrigating drains. There was an increased hospitalization in length of stay in patients with irrigating drains, but this difference was not statistically significant. Conceivable explanations for this rise in the hospital stay may be due to: Irrigating drains may have been used for more severe infections that would by designation have longer hospitalization. Many doctors participated in the surgeries. Surgeons that placed irrigating drains may use dissimilar discharge criteria that yield longer hospitalization. Irrigating drains may make infections poorer by driving bacteria into deeper anatomical spaces by forceful injection of irrigating fluid. From our study it was concluded that no difference was observed between the two modalities. Time, effort, cost and patient comfort may be factors to contemplate when determining on drain types.

Conclusion

The observations of our study of drains usage in 304 patients with who underwent the minor oral surgeries support the following conclusions: No connection between health condition and hospitalization was found. Severe or advanced infections associate with increased length of hospital stay. Number of drains placed is related to days at the hospital. Age and Gender don't affect the hospital stay in patients. Outcomes of this study expose no statistical rationale for choice of drain type for use in minor oral surgeries.

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