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ORIGINAL ARTICLE

Post-operative Complications of Patients Underwent Mastoidectomy at Tertiary Care Hospital

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ABSTRACT

Aim: To analyze the post mastoidectomy complications in patients presenting at tertiary care hospital.
Methods: This case series study was conducted at Department of ENT, DG Khan Hospital, DG Khan from March 2020 to September 2020 over the period of 6 months. Total 65 patients came for open cavity mastoidectomy either male or female having age between 20-60 years were selected for this study.
Results: In present study 65 patients had undergone open cavity mastoidectomy. Mean age of the patients was 39.95 ± 12.57 years. Out of 65 patients, cavity complications was found in 20 (31%) patients. Among the 20 patients who had cavity problems, the most common problem was prolonged discharge found in 19 (95%) patients followed by accumulation of wax in the cavity was found in 5 (25%) patients, Vertigo persisting beyond the immediate postoperative period was found in 3 (15%) patients, perichondritis of pinna was seen in 1 (5%) patients, development of facial palsy was found in 5 (50%) patients, recurrent cholesteatoma was found in 3 (15%) patients and wound infection was found in 2 (10%) patients.
Conclusion: Results of present study showed higher rate of post operative complications after mastoidectomy. Sclerotic mastoid was most common. Higher rate of complications was seen after 40th decade of life. Most of the patients were male as compared to female. Prolonged discharge was the most common problem.
Keywords: Mastoidectomy, Cavity, Meatoplasty, Pneumatisation, Cholesteatoma

INTRODUCTION

The main aims of surgical treatment of chronic middle ear suppuration are elimination of disease process, reconstruction of hearing mechanism and prevention of complications. This requires excision, exenteration and often exteriorisation of the disease process in the middle ear and mastoid. Controversy still exists among otolaryngologists regarding the need for exteriorisation of mastoid[1].

If the mastoid is exteriorised by taking down the posterior bony external canal wall, then an open cavity mastoidectomy is established. Avoidance of this step results in a canal wall up mastoidectomy. Supporters of open cavity mastoidectomy stress upon the future monitoring of the disease process, because even if some of the disease were left in the open cavity, that can be extruded spontaneously or can be removed during the subsequent visits.[2,3]

Hence this is the surgery of choice in patients where the surgeon is not sure of the follow up status. Canal wall down technique also ensures good ventilation of cavity which has a drying effect.[4]

Finally canal wall up technique needs surgical expertise for complete removal of diseased portion for avoidance of surgical complications. Usually an open mastoid cavity heals by secondary intention.[5,6] The average time for complete healing of this cavity varies according tovarious authors. Failure of healing and complete epithelialisation of this open cavity leads to cavity problems including continued discharge from the cavity, impaction of wax, persistent vertigo, residual/recurrent disease, and brain fungus[7]. So, the rationale behind the study as there was lacunae in literature in the current scenario this study was planned to analyse the cavity problems post mastoidectomy.

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MATERIAL AND METHODS

This case series study was conducted at Department of ENT, DG Khan Hospital, DG Khan from March 2020 to September 2020 over the period of 6 months. Total 65 patients came for open cavity mastoidectomy either male or female having age between 20-60 years were selected for this study. Patients with intratemporal or intracranial complications, patients with active foci of infection in nose, paranasal sinuses and throat, patients with malignancy of temporal bone were excluded from the study. Clinical history of all the patients was taken and general physical examination was done. All the patients were assessed primarily by their complaints and then by cavity examination.

All patients underwent modified radical mastoidectomy. In all patients, postauricular incision was given, retraction of soft tissues and exposure of mastoid area was done. Removal of cortical bone and exposure of antrum was done. Removal of bridge (superior osseous wall) was done and facial ridge (deeper part of posterior meatal wall) was lowered. Disease was removed and mastoid cavity was smoothened with polishing burrs. Tympanoplasty with ossicular reconstruction was done. Meatoplasty was done. Wound was closed and mastoid dressing was done. Patients were kept in hospital for 7 days on antibiotic cover with stitch removal on 7th postoperative day. Each patient had a follow up upto three

months at twice weekly intervals. In this study a borderline healing period of three months (12 weeks) was given for the complete epithelialisation of an open mastoid cavity. So, any patient presenting with symptoms beyond this period was taken as a cavity problem case. All the data was entered in pre-designed proforma along with demographic profile of the patients.

Data was analyzed by using SPSS version 20. Mean and SD was calculated for numerical data. Frequencies and percentage were calculated for categorical data. P value ≤0.05 was considered as statistically significant.

RESULTS

In present study 65 patients had undergone open cavity mastoidectomy. Mean age of the patients was 39.95 ± 12.57 years. Out of 65 patients, cavity complications were found in 20 (31%) patients. (Fig. 1)Out of 65 patients, 46 (70.77%) patients had sclerotic mastoid and 8 (12.31%) patients had cellular mastoid and 11 (16.92%) patients had diploeic mastoid. Out of 46 sclerotic mastoids patients, 15 (32.61%) patients had post mastoidectomy cavity problems. Out of 11diploeic mastoid patients, 3 (27.27%) patients had postoperative cavity problems and of the 8 cellular mastoids, 2 (25%) patients had postoperative cavity problems. Statistically insignificant association of cavity complications with type of mastoid was seen with p value 0.8781 (Table 1).

Table 1: Stratification in relation to mastoid type

Type of mastoid	Cavity problems		Total	P value
	Yes	No		
Sclerotic	15 (32.61)	31 (67.39)	46 (70.77)	0.8781
Cellular	2 (25)	6 (75)	8 (12.31)	
Diploeic	3 (27.27)	8 (72.73)	11 (16.92)	
Total	20 (31)	45 (69)	65	

Two age groups were created i.e age group 20-40 years and age group 41-60 years. Age group 20-40 years consisted on 34 (52.31%) patients and age group 41-60 years was consisted on 31 (47.69%) patients. Cavity complications were noted in 8 (23.53%) patients of age group 20-40 years and in 12 (38.71%) patients of age group 41-60 years. No association of cavity problems with age groups was found with p value 0.2921 (Table 2).

Table 2: Stratification for age

Age group	Cavity problems		Total	P value
	Yes	No		
20-40	8 (23.53)	26 (76.47)	34 (52.31)	0.2921
41-60	12 (38.71)	19 (26.76)	31 (47.69)	
Total	20 (31)	45 (69)	65	

Male patients were 42 (64.62%) and female patients were 23 (35.38%). Cavity problems were noted in 9 (21.43%) male patients while in 11 (47.83%) female patients. Association of cavity problems with gender was statistically significant with p value 0.0544. (Table 3)

Among the 20 patients who had cavity problems, the most common problem was prolonged discharge found in 19 (95%) patients followed by accumulation of wax in the cavity was found in 5 (25%) patients, Vertigo persisting beyond the immediate postoperative period was found in 3 (15%) patients, perichondritis of pinna was seen in 1 (5%) patients, development of facial palsy was found in 5 (50%) patients, recurrent cholesteatoma was found in 3 (15%) patients and wound infection was found in 2 (10%) patients. (Table 4)

Fig. 1: Incidence of cavity problem

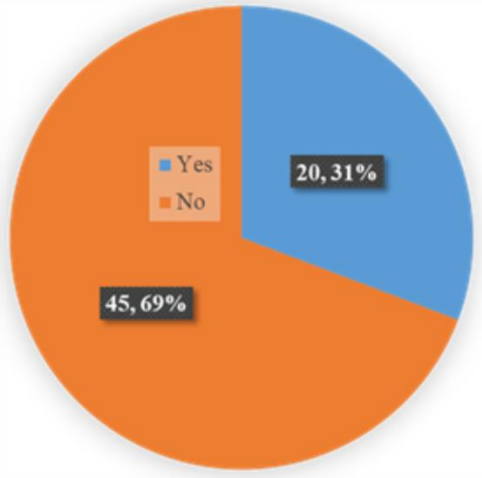

Table 3: Stratification for gender

Gender	Cavity problems		Total	P value
	Yes	No		
Male	9 (21.43)	33 (78.57)	42 (64.62)	0.0544
Female	11 (47.83)	12 (52.17)	23 (35.38)	
Total	20 (31)	45 (69)	65	

Table 4: Frequency of cavity problems

Cavity problems	N	%
Discharge	19	95
Wax	5	25
Vertigo	3	15
Perichondritis	1	5
Facial palsy	5	20
Recurrent cholesteatoma	3	15
Post-operative wound infection	2	10

DISCUSSION

Open mastoid cavity procedures are a form of surgical treatment of chronic otits media and can be broadly defined as those procedures requiring the removal of posterior exterior canal wall. Depending on how the middle ear and disease are managed, it can be identified by many names such as canal wall down mastoidectomy, modified radical mastoidectomy, Bondy mastoidectomy or radical mastoidectomy.[8]

Objective of the present study was to assess the post-operative complications of mastoidectomy.

In our study out of 65 patients, post-operative cavity complications were found in 20 (31%) patients. In one study by Rajan et al,[9]post-operative cavity complications were found in 26.92% patients. In study of Saraf et al,[10] total 25 patients underwent mastoidectomy, post-operative cavity problems were found in 36% patients and Sade et al[11] had 28% post mastoidectomy cavity problems and Kos et al[12] had 30% cavity problems. Khan et al[13] had 26.6% problem mastoid cavities. All these studies are comparable with our study. Mean age of the patients was

39.95 ± 12.57 years. Two age groups were created i.e age group 20-40 years and age group 41-60 years. Age group 20-40 years consisted on 34 (52.31%) patients and age group 41-60 years was consisted on 31 (47.69%) patients. Cavity complications were noted in 8 (23.53%) patients of age group 20-40 years and in 12 (38.71%) patients of age group 41-60 years. No association of cavity problems with age group was found with p value 0.2921.In study of Khan et al,[13] age range of the patients unresent mastoidectomy was 15-60 years and mean age was 29.8 ± 10.4.In one study by Saraf et al,[10] mean age of the patients was 29.4 years and most of the patients were 21-30 years.

In study of Malali et al,[14] most of the patients underwent mastoidectomy were between 31-45 years.

In study of Kumar et al,[15] most of the patients were between 31-40 years who were underwentmastoidectomy.

In our study out of 65 patients, 46 (70.77%) patients had sclerotic mastoid and 8 (12.31%) patients had cellular mastoid and 11 (16.92%) patients had diploeic mastoid. Out of 46 sclerotic mastoids patients, 15 (32.61%) patients had post mastoidectomy cavity problems. Out of 11diploeic mastoid patients, 3 (27.27%) patients had postoperative cavity problems and of the 8 cellular mastoids, 2 (25%) patients had postoperative cavity problems. Statistically insignificant association of cavity complications with type of mastoid was seen with p value 0.8781.

In study of Rajan et al,[9] of the 78 cases, 59 (75.64%) had sclerotic mastoid and 10 (12.82%) had cellular mastoid and 9 (11.53%) had diploeic mastoid. Of the 59 sclerotic mastoids, 16 (27.11%) had post mastoidectomy cavity problems. Of the 9 diploeic mastoid, 4 (44.44%) had postoperative cavity problems and of the 10 cellular mastoids, 1 (10%) had postoperative cavity problems. i.e., Of the 21 patients with cavity problems, 76.19% were of sclerotic mastoid and 4.76% were of cellular mastoid and19.04% were of diploeic mastoid.

In study of Kumar et al,[15] of the 120 cases, 86 (71.67%) had sclerotic mastoid and 18 (15%) had cellular mastoid and 16 (13.33%) had diploeic mastoid. Of the 86 sclerotic mastoids, 29(33.72%) had post mastoidectomy cavity problems. Of the 16 diploeic mastoid, 9 (56.25%) had postoperative cavity problems and of the 18 cellular mastoids, 2 (11.11%) had postoperative cavity problems. i.e., Of the 40 patients with cavity problems, 72.5% were of sclerotic mastoid and 5% were of cellular mastoid and 22.5% were of diploeic mastoid.

In present study, among the 20 patients who had cavity problems, the most common problem was prolonged discharge found in 19 (95%) patients followed by accumulation of wax in the cavity was found in 5 (25%) patients, Vertigo persisting beyond the immediate postoperative period was found in 3 (15%) patients, perichondritis of pinna was seen in 1 (5%) patients, development of facial palsy was found in 5 (50%) patients, recurrent cholesteatoma was found in 3 (15%) patients and wound infection was found in 2 (10%) patients.

In study of Kumar et al,[15] out of 21 patients who had cavity problem, 95.23% had prolonged discharge from mastoid cavity. Accumulation of wax was noted in 28.57% patients. Vertigo persisting beyond the immediate postoperative period was present in 19.04% patients. Postoperative wound infection was seen in 9.52% patients. In study of Khan et al,[13] after 3 months follow up total 8% patients had mild discharge, 12% patients had granulation and 2% patients had recurrence of cholesteatoma.

CONCLUSION

Results of present study showed higher rate of post-operative complications after mastoidectomy. Sclerotic mastoid was most common. Higher rate of complications was seen after 40th decade of life. Most of the patients were male as compared to female. Prolonged discharge was the most common problem.

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