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Profile of Otological Surgery in Kinshasa: 17 Years of Experience at Saint Joseph Hospital in Kinshasa / Limete, Democratic Republic of the Congo

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ABSTRACT

Objective: To analyse the various aspects of otological surgery performed at Saint Joseph Hospital in Kinshasa, Democratic Republic of Congo.

Patients and Methods: Descriptive documentary study covering the period from January 2007 to December 2024. A total of 484 patient records were included. The parameters studied were: frequency, age, gender, indications, surgical procedures and length of hospitalisation.

Results: 484 otological surgeries were performed, representing 36.4% of all ENT procedures. The majority of patients (58.3%) were under 25 years of age. The main indications were dry sequelae otitis (51.9%) and wet mucous otitis with open tympanum (22.9%). Tympanoplasty with or without mastoidectomy (57.2%) and mastoidectomy (23.4%) were the most common procedures. The average length of hospitalisation was 5.6 days (range: 1-30 days; median: 6 days).

Conclusion: Otological surgery in Kinshasa is dominated by the management of chronic otitis media. The main indications were sequelae otitis and wet mucous otitis with open tympanum, and tympanomastoid surgery was the standard technique.

Keywords: Otological Surgery; Chronic Otitis Media; Tympanoplasty; Kinshasa; Democratic Republic of the Congo

Introduction

Otological surgery has gradually expanded over the years thanks to highly technological advances, notably the contribution of microscopy, otovideoendoscopy, cochlear or brainstem implantation, and new medical imaging techniques [1]. In Kinshasa, microscopic otological surgery began at the Saint Joseph Hospital of Kinshasa (SJHK) in 2007 as part of the programme to combat deafness and hearing impairment run by the medical service of the Archdiocese of Kinshasa (AK). Studies conducted by Omadjela, et al. [2] in 2007 and 2019 [2,3] within the AK healthcare system reported that chronic otitis media (COM) was the leading cause of deafness in our region. However, active screening and therapeutic management of COM in our healthcare system were effective measures for improving the quality of care for this condition. This study therefore aims to analyse the various aspects of otological surgery at the AK General Reference Hospital.

Methods

This is a descriptive documentary study based on the files and records of patients who underwent ear surgery at SJHK between January 2007 and December 2024. The SJHK (Figure 1) is the AK's general

referral hospital, which receives patients from

a. 20 referral health centres managed by one general practitioner per centre (Figure 2),

b. 50 health centres managed by one registered nurse per centre (Figure 3),

c. And 80 community workers (Figure 4).

All files and records of patients received at the SJHK who underwent ear surgery were collated to collect data on frequency, age, gender, indication, surgical procedure performed and length of hospitalisation.

Figure 1: Treatment of chronic otitis media in the ENT Department of the hospital (SJHK) by the ENT specialist.

Figure 2: Management of chronic otitis media at the referral health centre by the general practitioner.

Figure 3: Screening for chronic otitis media at the health centre by the senior nurse.

Figure 4: Screening for chronic otitis media by community workers in the community.

Statistical Analyses

Data were collected using EPI INFO software and analysed using SPSS 21 software. Quantitative variables were expressed as mean + standard deviation and qualitative variables as frequencies.

Results

During the study period, 1,330 ENT surgical procedures were performed, including 484 (36.4%) otological procedures. The average age of patients undergoing otological surgery was 26 years (with a median age of 20 years and a range of 1 to 80 years). Two hundred and eighty-two patients (58.3%) were under the age of 25. There were 258 (53.4%) women and 216 (45%) men, giving a sex ratio of 1.2. Dry sequelae otitis (51.9%) and wet mucous otitis with open tympanic membrane (22.9%) were the most common indications, as reported in (Table 1). These were followed by serous otitis media (SOM) (10.3%) and foreign bodies lodged in the tympanic cavity (4.6%). According to age group (Table 2), it appears that dry sequelae otitis and wet mucous otitis with open tympanic membrane predominated in

the 6 to 25 age groups, while SMO and foreign bodies lodged in the tympanic cavity were more common in the 0 to 5 age group. Table 3 summarises the surgical procedures performed. It shows that tympanoplasty with or without mastoidectomy was the most common procedure (57.2%), followed by mastoidectomy (23.4%). In the group of other otological surgeries, transtympanic ventilation tube insertion and surgical extraction of foreign bodies lodged in the tympanic cavity were the most common procedures.

Table 1: Indications for ear surgery in 484 patients at SJHK.

Indications	n (%)
Dry sequelae otitis media	251 (51,9)
Wet mucous otitis media with open eardrum	111(22,9)
Serous otitis media	50(10,3)
Foreign body lodged in the tympanic cavity	22(4,6)
Externalised mastoiditis	12(2,5)
Mass in the external auditory canal and tympanic cavity	11(2,3)
Cholesteatomatous otitis media	10(2,1)
Prehelician fistula	4(0,8)
Traumatic tympanic perforation	4(0,8)
Exostosis of the external auditory canal	3(0,6)
Keloid of the ear	2(0,4)
Dermoid cyst of the pinna	2(O,4)
Uncontrollable retraction pocket	1(0,2)
Bilateral osteomyelitis of the lateral temporal bone	1(0,2)

Table 2: Distribution of indications by age group.

Indications	Age groups (years)													Total
	0-5	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	≥60	
Sequelae of COM	1	28	41	40	22	15	28	17	14	17	4	9	15	**251**
Suppurative COM	5	22	17	9	11	11	3	3	4	3	5	4	14	**111**
Serous otitis media	22	6	1	2	2	0	1	4	0	0	4	2	6	**50**
Foreign body lodged in the CT	10	10	0	1	0	1	0	0	0	0	0	0	0	**22**
Externalised mastoiditis	0	5	2	1	1	0	1	0	2	0	0	0	0	**12**
Endaural mass	1	2	3	0	0	0	1	2	1	1	0	0	0	**11**
Cholesteatomatous COM	1	0	1	3	1	0	2	0	0	0	1	0	1	**10**
Prehelician fistula	0	1	2	0	0	0	1	0	0	0	0	0	0	**4**
Tympanic perforation	0	0	0	1	2	1	0	0	0	0	0	0	0	**4**
Exostosis of the EAC	0	0	0	0	1	0	0	0	1	0	0	1	0	**3**
Ear keloid	0	0	0	0	0	0	0	1	0	0	1	0	0	**2**
Dermoid cyst of the pinna	1	0	1	0	0	0	0	0	0	0	0	0	0	**2**
Bilateral osteomyelitis	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
Uncontrolled retraction pocket	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total effective	42	74	68	58	40	28	37	27	22	21	15	16	36	484

Table 3: Type of otological procedures performed on 484 patients at SHJK.

N°	Type of intervention	n (%)
1	**Tympanoplasty**	**277 (57.2)**
	Type 1 tympanoplasty or myringoplasty	251(90,6)
	Myringoplasty + antroattico mastoidectomy	22(7,9)
	Type 2 tympanoplasty (myringoplasty + ossiculoplasty)	3(1,1)
	Type 2 tympanoplasty + antro atticomastoidectomy	1(0,4)
2	**Mastoidectomy**	**113(23,4)**
	Antro attico mastoidectomy	104(92)
	Radical mastoidectomy	9(8)
3	**Other otological procedures**	**94(19,4)**
	Transtympanic ventilation tube insertion	50(53,2)
	Surgical removal of foreign body embedded in the tympanic cavity	22(23,4)
	Excision of mass from the external auditory canal	11(11,7)
	Prehelician fistulectomy	4(4,3)
	Drilling of the external auditory canal	3(3,2)
	Keloid cure	2(2,1)
	Excision of dermoid cyst from the pinna	2(2,1)

The hospital stay for patients who underwent surgery ranged from 1 to 30 days, with a median stay of 6 days. However, in 10.1% of cases, the length of stay was not reported in the medical records (Figure 5). Table 4 shows the average length of hospitalisation by age group. It shows that children aged 0 to 5 and 6 to 10 had a hospital stay of less than 6 days.

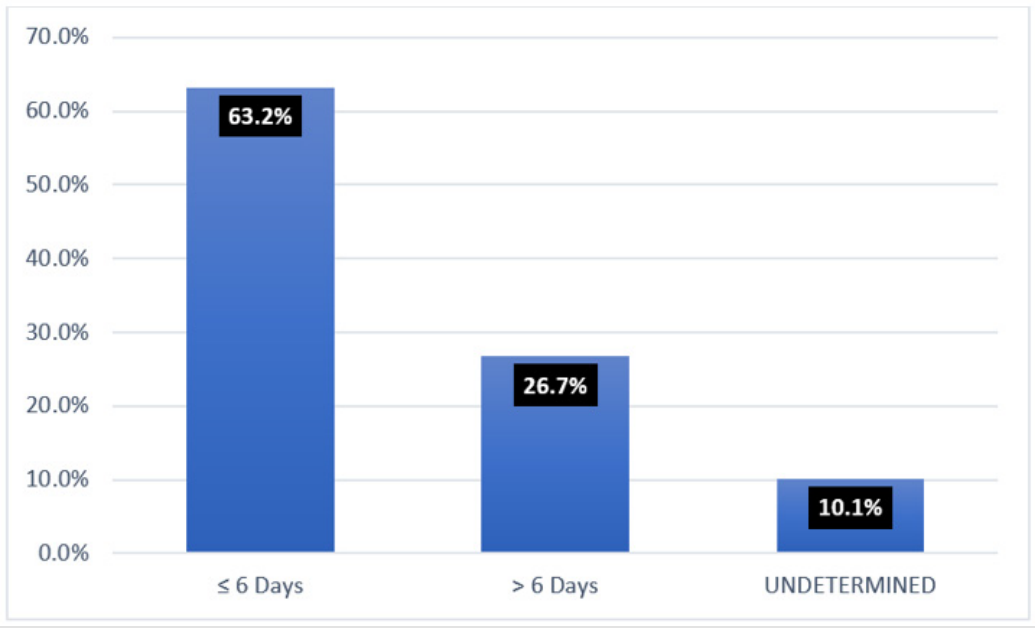

Figure 5: Distribution of patients according to length of hospital stay.

Table 4: Hospital stay and age.

Age group years	N	Mean	Standard deviation	95% confidence interval for the mean		Minimum	Maximum
				Lower terminal	Upper terminal		
0-5	38	3,61	1,939	2,97	4,24	2	11
6-10	70	4,84	2,069	4,35	5,34	2	12
11-15	58	6,03	2,435	5,39	6,67	2	15
16-20	52	6,35	3,798	5,29	7,40	2	30
21-25	38	5,71	1,944	5,07	6,35	2	13
26-30	26	5,81	1,833	5,07	6,55	3	9
31-35	33	5,52	2,123	4,76	6,27	1	13
36-40	25	5,48	1,851	4,72	6,24	2	8
41-45	20	6,15	2,961	4,76	7,54	3	17
46-50	20	5,85	1,725	5,04	6,66	3	10
51-55	13	5,77	1,878	4,63	6,90	3	9
56-60	13	6,31	2,496	4,80	7,82	4	13
>60	29	6,48	3,671	5,09	7,88	2	22
Total	435	5,58	2,605	5,34	5,83	1	30

Discussion

This article aimed to analyse the various aspects of otological surgery at Saint Joseph Hospital in Kinshasa Limete in Democratic Republic of the Congo. The main purpose of establishing this surgery in this general referral hospital in Kinshasa was the secondary prevention of hearing impairment. In terms of the frequency of otological surgery within ENT surgical activities at Saint Joseph Hospital in Kinshasa, our results showed a frequency of 36.4%. This frequency appears to be very high compared to that reported in the literature, which ranges from 5 to 15% [4-6]. This high frequency at Saint Joseph Hospital in Kinshasa (SJHK) can be explained, on the one hand, by the 17-year delay in surgical treatment of COM at SHJK and, on the other hand, by the community-based COM treatment strategy adopted by the medical network of the Archdiocese of Kinshasa since 2001 [3]. According to the indications for this surgery, COM and its complications were the most frequent indications in approximately 80% of cases. In our healthcare system, it has been reported that chronic dry otitis media sequelae, wet mucous otitis media with open tympanic membrane, and cholesteatomatous otitis media accounted for 99.4% of clinical forms of suppurative COM [3,7]. According to Abbas, et al. [8], in ENT practice in sub-Saharan Africa, suppurative COM is the most common ear disease in tropical countries [8].

SOM was the second most common surgical indication, accounting for 10.3% of cases. This chronic otitis media with closed tympanic membrane, once recognised as a condition affecting temperate countries, was reported as one of the most frequent indications for otological surgery in this study and suggests early diagnosis in order to avoid associated deafness [9]. Foreign bodies lodged in the tympanic cavity were the third most common surgical indication, demonstrating a lack of adequate care for the removal of foreign bodies from the ear due to a lack of appropriate equipment in our healthcare system, as reported by Omadjela, et al. [10] in 2021 in the management of chronic suppurative otitis media. With regard to the surgical procedures used, our results are corroborated by those already described by Omadjela, et al. [2,11] in 2018 and 2019, showing the predominance of otological surgery in Kinshasa with anatomical and functional success rates of 84% and 81% respectively, with a hearing gain of 16.2 decibels in patients. This has been very positive in the secondary management of hearing impairment due to COM and has improved patients' perception of this surgery in Kinshasa, as demonstrated by Garov, et al. [12] in Moscow in 2018. Furthermore, Denoyelle and Darrouzet [13] reported that tympanomastoid reconstruction surgery was a common procedure in routine ENT surgery given the high prevalence of infectious otological pathology in the population, with success rates varying between 90% and 94%.

The surgical treatment of SOM in this study was the transtympanic ventilation tube insertion, as described in the literature [14]. As for the management of foreign bodies lodged in the tympanic cavity, extraction was performed strictly under a microscope, with or without prior tympanotomy with detachment of the tympanomeatal flap, using appropriate microscopic forceps. Upstream health education is of great importance in preventing inappropriate extractions that can lead to significant anatomical and functional damage, exacerbating

hearing loss [15]. The age of patients was very important in the surgical management of otological pathologies, particularly in the context of our programme to combat deafness and hearing impairment due to preventable causes. Overall, otological surgery was predominant in young people under the age of 25 (58.3%) in the present study. This highlights the importance of health education and screening for COM in pre-school and school settings with a view to early treatment [16,17].

The same applies to SOM and foreign bodies in the ear. Indeed, surgical treatment of COM was predominant in the 6-25 age group and rare in the 0-5 age group. According to recommendation 11 of the French Society of ENT and Head and Neck Surgery of 2003 [18], in cases of simple tympanic membrane perforation in children, tympanoplasty should be avoided before the age of 6 due to the frequent occurrence of adaptation disorders in this age group. Obviously, in the 0-5 age group, the predominant presence of SOM and foreign bodies lodged in the tympanic cavity was a notable finding. Hence the importance of systematic screening and early management of these conditions in our setting during pre-school consultations. Children had a shorter hospital stay than older patients. Under these conditions, several authors authorise outpatient management in cases of paediatric ENT surgery [19-21]. However, the same authors report a return to hospitalisation in 2.8% to 4% of patients. In this context, a few days' hospitalisation is necessary for wound monitoring and patient recovery in our setting.

Conclusion

Otological surgery at Saint Joseph Hospital in Kinshasa is dominated by surgery for chronic otitis media. The main indications were sequelae of otitis media and wet mucous otitis media with open tympanic membrane. Tympanomastoid reconstruction surgery was the main surgical technique used.

Conflict of Interest

The authors declare that there is no conflict of interest.

Contribution of Authors

All authors contributed to the design, writing and finalisation of the article.

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