Trend analysis of various ocular surgeries performed at University of Port Harcourt Teaching Hospital, Nigeria over a ten-year period

Abstract

Aim: To identify the pattern of ocular surgeries performed at University of Port Harcourt Teaching Hospital and determine any significant changes in trends of these surgeries over a ten-year period - 2005 to 2016.

Methods: This study was a hospital-based retrospective study involving retrieval of records of all eye surgeries performed at University of Port Harcourt Teaching Hospital (UPTH) over a ten-year period (data for 2013 were not available). The various ocular surgeries performed in UPTH are routinely entered into an Ophthalmology register. Data were extracted from the ocular surgery register and inputted into an excel-spread sheet. Double check was employed to avoid errors in data entry. Data on major eye surgical procedures spanning eleven years were retrieved from the hospital records. Data analysis was performed using United States Centers for Disease Control and Prevention (CDC) Epi-Info version 7 software. Data were expressed using line graph and Chi square for trend performed to determine significant differences in trends of the various eye surgeries. A p-value < 0.05 was considered statistically significant.

Results: A total of 1,039 major and 1,322 minor ocular surgeries were done in this ten-year period. Most of the major cases (198) were done in 2012 while the least number of the major cases (27) were done in 2016. Significant variations in trends within this period occurred with cataract extraction, corneal repair, evisceration/enucleation and trabeculectomy ($p<0.0001$ respectively). Most of the minor cases (271) were done in 2008 while the least number (83) was done in 2011 with significant trend occurring with pterygium excision ($p<0.001$) and conjunctival mass excision ($p<0.009$). The most common major ocular surgery was cataract extraction (744) while the most common minor surgery was pterygium excision (597).

Conclusion: The ocular surgical load in UPTH is comparable to other parts of the country. There is a significant variation in the trend of cataract surgery, corneal repair, evisceration/enucleation, trabeculectomy, pterygium excision and conjunctival mass excision. These may have been affected by incessant breaks in services as a result of both local and national strike actions by health workers. In addition, patients' ignorance or refusal to accept some of the procedures offered

may have also contributed to the trend seen. Enlightenment and regular service delivery are keys to improving ocular surgical uptake.

Keywords; Trends analysis, Ocular Surgeries, Tertiary Hospital, Nigeria

Introduction

Some of the commonest reasons for most ocular surgeries are either to restore or improve vision, for cosmetic reasons, or to reduce morbidity and mortality from malignant lesions. Patients of all ages may present with ocular conditions that might require surgical intervention. In our environment, the most common ocular surgery is cataract – cataract is the commonest cause of visual impairment and blindness and affects more than 5% of the population in spite of the available remedies.[1,2] Other commonly performed ocular surgeries include corneo-scleral laceration repair[3] and evisceration/enucleation.[4,5,6] Trabeculectomy which is aimed at preventing blindness or reducing the rate of deterioration of vision in glaucoma usually presents with some challenges because patients with apparently good vision refuse surgeries while some surgeons prefer not to operate on those with end stage disease for fear of wipe out syndrome.[8]

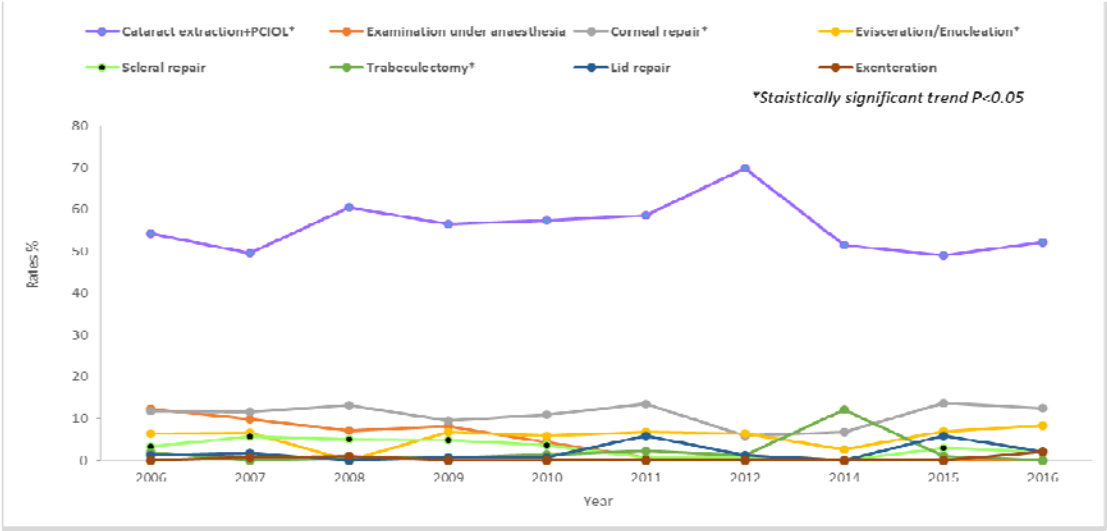
Cases of lid lacerations are usually under reported because majority of them are minor and are either managed at home, chemists or in peripheral clinics and fail to reach the tertiary centres.[7] Other ocular procedures routinely done are chalazion incision and curettage, pterygium excision, surgeries for cancers,[9,10,11] foreign body removal, punctal dilation, epilation[12] and squint surgeries. These are aimed at restoring good cosmetic appearance. The study set out to report any changing trends in the pattern of eye surgeries done at our Facility – a Tertiary Health Institution.

Methods

This study was a hospital-based retrospective study involving retrieval of records of all eye surgeries performed at University of Port Harcourt Teaching Hospital (UPTH) over a ten-year period (data for 2013 were not available). The various ocular surgeries performed in UPTH are routinely entered into an Ophthalmology register. Data were extracted from the ocular surgery register and inputted into an excel-spread sheet. Double check was employed to avoid errors in data entry. Data on major eye surgical procedures spanning eleven years were retrieved from the hospital records. Data analysis was performed using United States Centers for Disease Control and Prevention (CDC) Epi-Info version 7 software. Data were

expressed using line graph and Chi square for trend performed to determine significant differences in trends of the various eye surgeries. A p-value < 0.05 was considered statistically significant.

Results



No data available for 2013

Fig. 1. Line graph shows trends in Major Ocular Surgeries in UPTH (2006 – 2016)

Cataract surgeries accounted for most cases done as shown by the line graph. It accounted for about 55% to over 70% of surgeries done between 2006 and 2012; then dropped to less than 55% between 2014 and 2016. The trend for other common eye surgeries - corneal repair, scleral repair, trabeculectomy, eyelid repair, enucleation/evisceration and exenteration were similar over the years. This trend over the years shows statistical significance. ($P<0.05$)

Table 1. Frequency Distribution of Major Ocular Surgeries in UPTH (2006-2016)

Major Ocular Surgeries	Year**										Chi Square †	p-value
	2006	2007	2008	2009	2010	2011	2012	2014	2015	2016		
Cataract extraction + PCIOL	83 (70.3%)	60 (65.9%)	119 (75.3%)	83 (73.4%)	78 (72.2%)	78 (67.2%)	164 (82.8%)	29 (65.9%)	36 (54.5%)	14 (19.7%)	39.95	<0.0001 *
Corneal Repair	18 (15.2%)	14 (15.4%)	26 (16.4%)	14 (12.4%)	15 (13.9%)	18 (15.5%)	14 (7.1%)	5 (11.4%)	14 (21.2%)	6 (8.4%)	85.64	<0.0001 *
Sclera Repair	5 (4.2%)	7 (7.7%)	10 (6.4%)	7 (6.2%)	5 (4.6%)	1 (0.9%)	1 (0.5%)	0 (0,0%)	3 (4.5%)	1 (1.4%)	0.24	0.6234
Evisceration/ Enucleation	7 (5.9%)	7 (7.7%)	0 (0,0%)	7 (6.2%)	7 (6.5)	8 (6.9%)	13 (6.6%)	1 (2.3%)	6 (9.1%)	4 (5.6%)	14.56	<0.0001 *
Exenteration	0 (0.0%)	1 (1.1%)	2 (1.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.4%)	0.81	0.3675
Lid Repair	2 (1.7%)	2 (2.2%)	0 (0,0%)	1 (0.9%)	1 (0.9%)	8 (6.9%)	3 (1.5%)	0 (0,0%)	6 (9.1%)	1 (1.4%)	0.00	0.9754
Trabeculectomy	3 (2.5%)	0 (0,0%)	1 (0.6%)	1 (0.9%)	2 (1.8%)	3 (2.6%)	3 (1.5%)	9 (20.4%)	1 (1.5%)	0 (0,0%)	24.17	<0.0001 *
Total	**118 (100%)**	**91 (100%)**	**158 (100%)**	**113 (100%)**	**108 (100%)**	**116 (100%)**	**198 (100%)**	**44 (100%)**	**66 (100%)**	**71 (100%)**		

†Chi square for trend **statistically significant* ***No data available for 2013*

The highest number of eye surgeries (n=198; 82.8%) was done in 2012 while the least (n=71; 19.7%) was in 2016. The trends analyses all show statistical significance except for scleral repair, exenteration and lid repair. ($p = 0.6234$, $p = 0.3675$, $p = 0.9754$ respectively) The peak periods for the procedures were 2008 for corneal and scleral repairs, 2011 for lid repair, 2012 for cataract surgeries, and 2014 for evisceration and enucleation; and trabeculectomy. In 2014, the least number of corneal repairs (5) and evisceration/enucleation (1) were done; there were no scleral repairs, exenteration and lid repair surgeries.

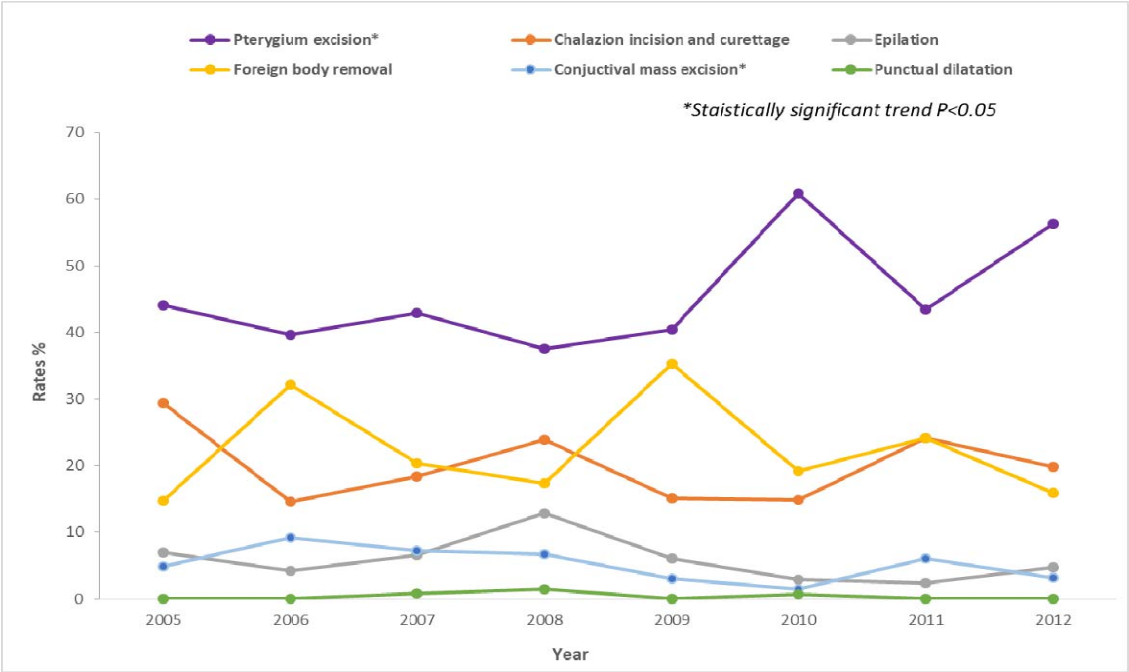


Fig. 2. Line graph shows trends in Minor Ocular Surgeries in UPTH (2005 – 2012)

In Figure 2, pterygium excision was the most common minor ocular surgical procedure done over the years. This was followed by foreign body removal and chalazion incision and curettage. The year 2009 recorded the highest number of chalazion incision and curettage, while for pterygium it was 2010. The least common procedure done was punctal dilation. This change in trend over time was statistically significant ($p<0.05$).

Table. 2. Frequency Distribution of Minor Ocular Surgeries in UPTH (2005-2012)

Minor Ocular Surgeries	Year								Chi Square†	p-value
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**		
Pterygium Excision	45 (44.1%)	95 (39.7)	122 (42.9%)	102 (37.6%)	40 (40.4%)	86 (60.9%)	36 (43.4%)	71 (56.3%)	9.83	0.0017*
Chalazion I & C	30 (29.4%)	35 (14.6%)	48 (18.4%)	65 (23.9%)	15 (15.2%)	21 (14.9%)	20 (24.1%)	25 (19.8%)	0.09	0.7627
Epilation	7 (6.9%)	10 (4.2%)	17 (6.5%)	35 (12.9%)	6 (6.1%)	4 (2.8%)	2 (2.4%)	6 (4.8%)	1.31	0.2527
FB Removal	15 (14.7%)	77 (32.2%)	53 (20.3%)	47 (17.3%)	35 (35.4%)	27 (19.1%)	20 (24.1%)	20 (15.9%)	1.95	0.1628
Conjunctival Mass Excision	5 (4.9%)	22 (9.2%)	19 (7.3%)	18 (6.6%)	3 (3.0%)	2 (1.4%)	5 (6.0%)	4 (3.2%)	6.78	0.0092*
Punctal Dilation	0 (0.0%)	0 (0.0%)	2 (0.8%)	4 (1.5%)	0 (0.0%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	0.03	0.8576
Total	**102 (100%)**	**239 (100%)**	**261 (100%)**	**271 (100%)**	**99 (100%)**	**141 (100%)**	**83 (100%)**	**126 (100%)**		

†Chi square for trend **Statistically significant*

Most of the minor surgeries (771) were done between 2006 and 2008, with the highest number (271) being in 2008. The least number of eye surgeries (n=83) were done in 2011. There were more foreign body removals (77) and conjunctival mass excision (22) in 2006 compared to other years; and more pterygium excision (122) and chalazion incision and curettage in 2007 compared to 2008 with more epilation (35) and punctal dilation (4). The least number of pterygium excisions (36), chalazion I&C (20) and epilation (2) were recorded in 2011. The trends for pterygium excision and conjunctival mass excision were statistically significant with $p < 0.0017$ and 0.0092 respectively.

Discussion

A total of 1,039 major and 1,322 minor surgeries were done within this ten-year period. Most of the major cases were done in 2012. In 2016, only 27 major surgeries were done. Most of the minor cases were done in 2008 while the least number were done in 2011. These fluctuating tends may be due to the constant interruption of services as a result of both local and National industrial strike actions embarked upon by staff of the Federal Ministry of Health. Over seventy percent of the patients who had major surgeries had cataract extraction with significant differences in the numbers done each year ($p<0.001$).

In many developing countries, cataract surgical services are not always accessed and there are many reasons which include but not limited to lack of awareness that cataract is treatable and cost implications. In our setting with a number of cataract camps organized yearly, there is availability of cataract surgical services but the trend seen may not be unrelated to the almost constant disruption of clinical services for all kinds of reasons including those already stated. One hundred and forty four cases of corneal repairs were done this period. Most of the corneal repairs were done in 2008 – this is not surprising because that was at the height of the militancy that plagued the Niger Delta Region.

Few cases of scleral repair (40) were done in the period under review with majority occurring between 2007 and 2009. Ignorance could be responsible for this low number as some patients in our environment prefer to self-medicate or patronize quacks. Except for 2012 with 13 cases, all other years under review recorded less than 10 cases of evisceration and enucleation; only four cases of exenteration were recorded in this ten-year period. Some traditional beliefs discourage the removal of the eyes for any reason and this may be responsible for the small number recorded. This is in contrast to the studies in Enugu and Ile Ife.[4,5,6] Only 24 cases of eyelid repair were done in this period. Minor lid lacerations are either managed at home, chemists or in peripheral clinics and do not reach the Tertiary Eye Centres. This may explain the low volume compared to other studies.[7]

The total number of trabeculectomies was 23 representing 2.1% of the total major surgeries. There is a general low uptake of trabeculectomy surgical services in our centre but this improved significantly in 2014 (9 trabeculectomies) as a result of additional training in glaucoma for some of our Comprehensive Ophthalmologists. Most glaucoma patients shy away from trabeculectomy until very late in the disease process when the glaucoma is either very advanced or end-stage. The reason may be because patients with apparently good vision refuse surgeries while some surgeons prefer not to operate on those with end stage disease for fear of wipeout

phenomenon. Our result compares well with that of Kyari et al. who observed that less than half of patients offered glaucoma surgery underwent the procedure and all those on consecutive anti-glaucoma medical therapy refused surgery[8]

It was observed that pterygium excision was the commonest minor surgical procedure that was performed. This is similar to other studies in Nigeria.[9,10,11] In their study, Odugbo et al. noted that within a 7-year study period pterygium excision accounted for over 55% of conjunctival surgeries.[4] Pterygium is a common ocular surface disease in tropical countries including Nigeria. In our study, most pterygium excisions were performed using the bare-sclera technique with adjunct intraoperative application of 5-flurouracil or mitomycin-C to the sclera bed or primary conjunctival autologous grafting similar to other studies in Nigeria.[9-11]

Conjunctival mass excision peaked in 2006 and progressively declined afterwards. This may be attributed to the increasing use of HAART in the management of HIV/AIDS patients leading to a decrease in the number of ocular surface squamous neoplasia. Studies elsewhere collaborates our finding[10].

The uptake of chalazion incision and curettage surgical services had a similar undulating trend over the ten-year period; however, this was not statistically significant ($p=0.7627$). Epilation constituted 0.66% of all minor ocular procedures performed over this period. More cases were done in Northern Nigeria compared to our Centre and this may be due to the high prevalence of Trachoma in Northern Nigeria.[12] Seventy-eight cases of conjunctival masses were excised over this period.

Conclusion

The ocular surgical load in our Centre is comparable with other tertiary hospitals in Nigeria. There is a significant variation in the trend of cataract surgery, corneal repair, evisceration/enucleation, trabeculectomy, pterygium excision and conjunctival mass excision. These may have been affected by the several breaks in services and patient's ignorance or poor uptake of some of the surgical procedures. A lot need to be done in the areas of public enlightenment and provision of uninterrupted eye care service as a way of improving uptake of ocular surgeies.

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