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ORIGINAL RESEARCH

Referrals, procedures and complications in oral surgery services. Literature review

Derivaciones, procedimientos y complicaciones en servicios de cirugía bucal. Revisión de la literatura

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ABSTRACT

Several studies have described and analyzed performance of oral surgical services with the aim of introducing improvement in care quality and availability. The aim of the present article was to review referral, procedure and complication patterns described in scientific literature. In studies mainly conducted in the United Kingdom and Africa, it was determined that most frequent procedures are of low complexity, mainly extractions, and within extractions, those of third molars. Local anesthesia was used in most procedures, the most common reasons for referral were multiple, surgical or complicated extractions. Referral was mainly executed by the general dentist, and in lesser amounts by the specialist dentist, general physician and specialist physician. Few procedures cause post-surgical complications. Among these we can count dry socket, infection, inflammation, pain around sutures and hemorrhage.

RESUMEN

Varios estudios han descrito y analizado el funcionamiento de los servicios quirúrgicos orales/bucales en miras a introducir mejoras de calidad y disponibilidad de la atención. El objetivo del presente artículo es revisar los patrones de derivación, procedimentales y de complicaciones descritos en la literatura de corriente principal. En estudios realizados principalmente en Inglaterra y África, se determinó que los procedimientos más frecuentes son de baja complejidad, principalmente exodoncias, y dentro de las exodoncias, primariamente terceros molares. En la mayoría de los procedimientos se utilizó anestesia local y el motivo más común de derivación fue por extracciones múltiples, quirúrgicas o complicadas. La derivación fue dada principalmente por el odontólogo general, y en menor cantidad por odontólogo especialista, médico general y médico especialista. Son pocos los procedimientos que generan complicaciones postquirúrgicas, dentro de las cuales está alveolo seco, infección, inflamación y dolor alrededor de las suturas y hemorragias.

Key words: Referral and consultation, oral surgery, secondary center, post-operative complications.
Palabras clave: Remisión y consulta, cirugía bucal, centro secundario, complicaciones postoperatorias.

INTRODUCTION

There are several types of services in the world where oral and maxillofacial surgeries are performed, they can vary from primary to tertiary.[1-9] Maxillofacial and oral surgical procedures have experienced great development, nevertheless, population requirements keep showing similar patterns to those of former decades.[4-10]

Many studies have been published in mainly Anglo-Saxon literature which describe and analyze performance of oral surgery services.[1-10] These data allow the designing and planning of better quality and relevance surgical care politics in accordance with the requirements of each locality.[6]

The aim of the present article was to review referral, procedure and complication patterns of oral surgery services described worldwide in scientific literature.

WORLDWIDE ORAL SURGERY SERVICES AND SIMILAR SERVICES

The National Health Service at the United Kingdom has decided to execute referrals to primary care centers (general dentist care) so as to achieve a health system that can provide faster service to the population, improve accessibility and decrease cost. Patients with more severe health problems are referred to secondary or tertiary care centers where specialists can be found.[1-5]

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The Intermediate Minor Oral Surgery Service in Croydon[6] London was created to perform surgeries which surpass the ability of a primary care center, but which are not urgent or highly complex. In the United Kingdom, unlike other countries, there are still large numbers of oral surgery procedures executed in hospitals instead of in Primary Care Services; this increases National Health Service expenditure.[3]

Croatia's dental health system is part of the general health system. It is divided into primary care (only general dentists), secondary care (specialists), tertiary care (when patient hospitalization is required), as well as patients referred from primary care centers.[7,8]

In Spain, most maxillofacial and oral surgeries are conducted at the Maxillofacial Surgery Services of the public hospitals system; this generates long waiting lists and excessive financial and social load.[9]

In Sarajevo, Bosnia-Herzegovina, dental care is classified into primary (general dentists), secondary (oral surgeons at the Oral Surgery Departments of hospitals) and tertiary (performed by oral surgeons at the Oral Surgery Department of the Sarajevo University School of Dentistry) where patients are cared for according to the case's severity.[10]

In Dar es Salaam, Tanzania, major and minor maxillofacial and oral surgeries are performed at the Muhimbili National Hospital which is the largest center of the country offering maxillofacial and oral surgery services. In Tanzania there are another three minor services of this kind.[11] In Kano, Nigeria, the Maxillofacial and Dental Surgery Department of the AminuKano teaching hospital constitutes a center for tertiary care which treats patients coming from 4 out of the 8 states of Northwest Nigeria.[12]

In Australia, there are services with specialists in Medicine and Oral Pathology, where treated patients were referred by general and specialized dentists and physicians. This is due to the fact that a sector of population, when faced with a dental problem, seeks solution with a physician instead of a dentist; for this reason most patients arrive at these specialized centers as referrals, and not due to their own initiative.[13]

In the United States of America, general dentists provide primary care, which is the basis of the dental health service, from where patients are refereed to more complex oral surgery services.[14]

PROCEDURES CONDUCTED AT ORAL SURGERY SERVICES

In this section we will present the types of procedures undertaken in oral and/or maxillofacial services, in primary, secondary and tertiary care centers in several countries.

During the period April 2007-March 2008, at a minor oral surgery service in the United Kingdom, the most common procedure was surgical exodontia (excluding third molars), second place was taken by surgical extraction of third molars which was followed by surgical endodontic procedures. Antibiotics were prescribed in 96% of all endodontic surgical procedures, whereas in other procedures antibiotic prescription was considerably lower (under 20%).[4]

During the period December 2011-May 2012, at the Maxillofacial and Oral Surgery Department of the University of Manchester (secondary care services), United Kingdom, half the procedures were undertaken with local anesthesia only, 36% was conducted under general anesthesia or patient sedation, and the rest of the percentage of patients was re-referred or were not subjected to intervention; 51% of those patients were under treatments with drugs (medicine). Asthma, hypertension and hypercholesterolemia[15] were the most common conditions reported in the patients' history.

At the Intermediate Minor Oral Surgery Service, in Croydon, London, in the time comprised between January 2008 and December 2009, approximately 68% of all patients were referred for a single procedure, whereas the remaining 32% were referred for multiple procedures. Procedures undertaken were difficult extractions, (31%), simple extractions (13%), third molar extractions (39%), impacted root (14%) and others (3%). Procedures were performed without patient sedation.[6]

In the United Kingdom, at a primary care oral surgery service, procedures executed by any given oral surgery specialized dentist were the following from higher to lower frequency: extractions (85.2%), endodontic surgery (10.6%), oral lesion biopsy (2.4%), cyst removal (0.6%) periodontal surgery (0.3%), others.[1]

At the Maxillofacial Oral Surgery Unit of the Chris Hani Baragwanath hospital, Johannesburg, in 1987 (first semester) general anesthesia was more used than local anesthesia (87.4 and 12.6% respectively), whereas the situation was reversed in the first semester of 2007, and local anesthesia was used in 54.7% of all procedures. Diagnoses warranting surgery were: trauma, tumor, impacted tooth, mobile or decayed tooth, abscess/cellulite, post-surgical complications, temporomandibular disorders and facial deformities. During both periods, most frequent diagnoses were trauma, followed by tumors in 1987

and impacted teeth in 2007. It must be taken into account that these data belong to South Africa, where there are constant assaults and violence, for that reason, a great percentage of all surgeries are due to trauma, especially mandibular fractures.[16]

At the Muhimbi National Hospital, in Tanzania, during January 2003-january 2009 most frequent major conditions were benign tumors (56.2%), fractures (12.8%), cysts (10.1%), malignant tumors (7.9%) chronic infections (3.7%) among others. Major surgery procedures conducted were tumor excision with or without reconstruction (45.8%) open reduction with fixation and inter-maxillary fixation (11.2%), tumor enucleation (9.9%), fistulectomy (9.9%), wide surgical excision (5.9%), sinusectomy (3.5%), Sequestrectomy (3.3%), condylectomy and/or coronoidectomy (5.3%) and other surgical procedures in less than 1% of all cases.[11]

Procedures undertaken at a private Clinic and Oral Pathology and Medicine Service in Brisbane, Australia between 1997 and 2001 were the following: drug prescription (50.81 and 36.6% respectively), biopsies (19.3 and 18.4%), blood sample (12.13 and 14.4%), imaging (9.42 and 13%), cryotherapy (1.72 and 6.2%%, mainly for mucocele). In the private clinic, most (62.3%) biopsies were excisional, whereas in the hospital, most biopsies were incisional. In both establishments, needle biopsies represented a low percentage.[13]

At the Oral Surgery Department of the School of Dentistry of the University of Sarajevo, between January 2011 and December 2012, patients were referred by general dentists, and local anesthesia was used in all procedures. Most frequent clinical diagnoses were impacted or semi-impacted teeth (35%), periapical lesions (15.7%) and retained roots (13%). Third molars were the most frequently found impacted teeth (85%). Conducted surgical procedures were: surgical extraction (49.8%), cyst extraction (17.4%), apicoectomy (15.7%), excision (4.9%), alveoloplasty (4%) and frenectomy (1.6%).[10]

At the oral surgery department of the Dubrava University Hospital, Croatia, in 2011, the following procedures were undertaken at the outpatient clinic: dental extraction (37.67%), examination and surgery programming (29.51%), examination with or without follow-up (29.71%) , intra-oral incision (1.36%) and others (1.74%). Procedures undertaken at the outpatient surgery were: alveolectomy (57.25%), apicoectomy (16.72%), cystectomy (6.68%), excision (5.13%), frenulectomy (3.04%), exploration (2.68%) and others (8.50%). Most frequent diagnoses at the outpatient clinic were retained roots, chronic periapical lesions, and invasive caries, whereas at the operating theatre most frequent diagnoses were impacted teeth, choric periapical lesions and retained roots.[7]

At the Oral Surgery Department of the Rijeka (Croatia) Hospital Clinical Center during the year 1998-1999, the most common reasons for referral were chronic periapical lesion (33.3%), retained root (26.7%) impacted tooth (12.7%), root cyst (8.3%). Most frequent procedures were apicoectomy (30.6%), extraction (27.5%), alveolectomy (25.9%), cyst removal (7.8%) and frenulectomy (3.8%).[8]

During the period January 2000-December 2005, at the Oral and Maxillofacial Surgery Service of the San Lucas Hospital, Rio Grande do Sul (Brazil) Pontifical Catholic University the following procedures were most frequently conducted: dentoalveolar surgery (22.9%), orthognathic surgery (21.4%), facial fractures (18%), surgeries conducted to treat pathological conditions (16.7%) grafts and tooth implants (13.7%). Other surgical procedures were conducted due to cleft lip and/or palate, (3.4%), maxillofacial infection treatment (2.95%) and temporomandibular surgeries (1%). A decrease in surgical procedures' number was observed along the studied years.[17]

At the Maxillofacial and Dental Surgery Department of the AminuKano Teaching Hospital (tertiary care hospital) (Nigeria), primary (92.8%) and secondary (9.2%) surgical procedures were undertaken between 2001 and 2003. General anesthesia was used in 88.5% of patients, and the remainder 11.5 were treated under local anesthesia. Primary surgery procedures were: reduction and immobilization (23.3%), intra-bone wiring (13.3%), repair (8.8%) resection and de-articulation (7.7%), suture (7.7%) excision (6.6%), parotidectomy (5.5%) and others. Secondary surgical procedures were: parotid duct cannulation (25%), oral-nasal fistula repair (one patient, who represents 12.5%) or secondary surgical procedures), re-fracture with trans-bone wiring (12.5%), skin graft (12.5%) secondary suture (12.5%). Steinman pin insertion due to mandibular segment loss (12.5%) and autogenous iliac crest graft due to loss of mandibular segments (12.5%). In the characteristics of these procedures, the low socio-economic level of patients and high frequency of facial trauma in Nigeria must be taken into account.[12]

At the University Hospital 12 de Octubre, of the Madrid (Spain) Complutense University, during two academic years of the School of Dentistry, most procedures undertaken were extractions, which constituted 91% of all procedures. Other interventions conducted were periapical surgery (0.5%), orthodontic traction (0.2%), cyst removal (0.6%), bone planning

and torus (0.2%), soft tissue intervention (0.5%) and consultation/controls (7%). Within extractions, lower third molars represented 52.5% of all cases, upper third molars 31%, impacted canines 1.2%, impacted premolars 0.3%, supernumerary teeth 0.5% and others 5.5%.[9]

At the University Provincial Hospital «Capitán Roberto Rodríguez Fernández», municipality of Moron, Ciego de Avila province, Cuba, during the period January-December 2011, 95.6% of all procedures undertaken by a maxillofacial surgeon were conducted under local anesthesia, and 4.37% with general anesthesia, 0.93% of these latter patients were admitted into hospital. Minor surgeries were 30.6 and 69.4% were major surgeries. Soft tissue conditions most commonly clinically diagnosed were basal cell carcinoma in first place, nevus in second place and sebaceous cyst in third place. The most frequent hard tissue conditions were impacted third molars, followed by irregular ridges and incurable teeth in the third place. In the case of third molar extraction, some were simple surgeries which could have been carried out in primary care centers, nevertheless, patients were referred to the hospital due to other causes.[18]

At the Maxillofacial Surgery Service of the University Hospital «Dr. Miguel Enriquez», in 2003, 61% of all procedures were outpatient major surgeries. Procedures undertaken were multiple extractions with alveoloplasties (48.02%), removal of impacted teeth (38.60%), pre-prosthetic surgery (9.68%), benign neoplasia (1.23%), oncologic surgery (1.05%), cosmetic surgery (0.86%) and others (0.55%). Only 0.25% of all procedures were emergency operations, 99.75% were elective surgeries; all surgeries were executed under local anesthesia.[19]

During one week in 1990 and 2000, in Australia, procedures conducted by oral and maxillofacial surgeons were dental-alveolar service (over 60% in both years), trauma (lesser than 10% in both years), pathological circumstances (lesser than 10% in 1990 and over 10% in 2000), orthognathic surgery (lesser than 10% in both years) reconstructive surgery (under 10% in both years) and others (under 5% in both years).[20]

In the period September 2008-August 2010, at the Pediatric Emergency Service of the 12 de Octubre Hospital, (Spain) operating under a new protocol for dental trauma care, 60% patients were cared for by only pediatricians, and patients referred to a maxillofacial surgeon underwent suture of gingival lacerations (6.4%), extractions (3%) and dental splinting (1.3%).[21]

In South Wales, United Kingdom, in the period 1999-2007, out of 11325 patients, 287 received dental general anesthesia; out of these 30.7% were children five year old or less. The most frequent reasons were dental caries treatment, with an average of 4 extractions (87.1%), adult anxiety (6.6%) orthodontic treatment (3.5%) and minor oral surgery (2.8%).[22]

At a teaching hospital in the United Kingdom, in 1997, children (1-16 years) who were subjected to general anesthesia for dental treatment exhibited complicated medical history, were very anxious of were children five year old or less with rampant caries. Most common procedures undertaken were extractions and restorative treatments (55.5%), only extractions (57/263) and only restorative treatments (36/263).[23]

PATTERNS OF REFERRAL TO ORAL SURGERY SERVICES

In a primary care center in Croydon, in the periods April 2004-April 2006 and January 2008-June 2010,[5,24] average waiting period between referral time and first appointment to undertake surgery or treatment was 3-6 weeks, it was, 6.8 weeks at a minor oral surgery service in United Kingdom, during the period April 2007- March 2008,[4] maximum of eight weeks at the Maxillofacial and Oral Surgery Department of Mayday University in the period April 2004-April 2006, almost 10 weeks at an Intermediate Minor Oral Surgery in Croydon, London, between January 2008-December 2009,[6] between 4 weeks (79% of all cases) and almost 10 weeks (97% of all cases, the remaining 3% was delayed due to patients' personal reasons) at a primary care center in United Kingdom in the year of 2004.[1]

During the period January 2008-June 2010, only 5% of patients remained untreated and were referred to a secondary care service, mainly due to requirements of a more complex surgery or because the patient expressed the wish to be treated under general anesthesia. Other patients were re-directed to their general dentist due to an inappropriate referral.[5] In the United Kingdom, limit of time between referral day up to initiation of surgery or treatment was 18 weeks, but sometimes, overload of patients requiring these services caused a delay longer than 18 weeks, this was the case at the Mayday University Hospital in April 2007.[24]

On the other hand, average waiting time from appointment before surgery to surgery itself in a teaching hospital in the United Kingdom in1997 was 4.8 months, with a maximum of 6 months for 75% of

children who received general anesthesia for dental treatment. Difference in waiting time was significant when comparing children with complex medical history –who were treated before– and healthy children.[23]

In a three year period, April 2004-april 2006, at the Maxillofacial and Oral Surgery Department at Mayday University, referral *triage* was undertaken so as to decrease waiting list time. From this *triage*, 36% referral to secondary care services was achieved as well as 59% referral to primary care center where patients were treated by oral surgeons and only local anesthesia was used. Referrals were mainly instructed by general dentists, but they were also implemented by general physicians, consultants of the emergencies and accident departments, other consultants, patients who self-referred, and in some cases from admitted emergency cases.[24]

In Australia, during one week in 1990 and 2000, referral to oral and maxillofacial surgeons was implemented by a general dentist (64.6% in 1990, 61.2% in 2002), specialist dentist (21.3 and 22.7% respectively), general physician (9.4 and 11.2% respectively) and specialist physician (4.7 and 5.0% respectively).[20] At the Maxillofacial and Oral Surgery Department of the Manchester Dental Hospital, during December 2011-May 2012, 97.7% referrals were implemented by general dentists and the rest of patients were referred by other hospitals, general practitioners or dental centers.[15]

Most patients treated at the University Hospital 12 de Octubre of the Complutense University in Madrid had been referred by the Social Security Institute in Madrid as well as from Primary Care Centers (84%), 13.5% of patients attended the clinic without previous referral, and 2.5% were students who belonged to the University´s Dental School staff.[9]

At an Oral Pathology and Medicine private clinic in Brisbane, Australia, during a five year period, 1997-2001, 82% of all patients had been referred by dentists (71.47% general dentists, 10.87% specialized dentists) and 18% by physicians (11.05% by general practitioners and 6.61% by specialized physicians. At an Oral Pathology and Medicine Hospital in Brisbane, Australia during the same period, 48.4% of referrals were from clinics located at the same hospital, 45.8% by general dentists, 3.4% by general practitioners and 2.4% by specialized physicians.[13]

Reasons for referral at this private clinic were bulging of the soft tissues (19.58%), ulcer (10.8%), leukoplakia (9.9%), pigmented lesion (5.27%) and xerostomia (3.51%), whereas in the hospital, reasons for referral were leukoplakia (11.5%), ulcer (9.31%), pigmented lesion (6.43%), candidiasis (5.24%) and *lichen planus* (3.21%). Some patients were referred for more than one cause. In certain cases, patients required other treatment; for this reason they were referred from the private clinic (20.5% of patients) or hospital (30.8% of patients) to a sub-specialty physician (19.3% hospital, 20% private clinic), or sub-specialty dentist (71.8% hospital, 65.5% private clinic), generally, one particular sub-specialist. Within referrals for sub-specialized dentists, 23.4% of hospital referrals and 21.7% of private clinic referrals were for oral surgeons, for extraction, excision, surgical exploration or consultation.[13]

Reasons for referral at the Maxillofacial and Oral Surgery Department of the Dental Hospital, Manchester University, during December 2011-May 2012 were varied: the most frequent were multiple or difficult surgical extractions. After this, in smaller numbers, counting in a high to low order, causes were: indication for intra-venous sedation, apicoectomy, biopsy, atypical pain, cyst, extraction failure, complex medical history, prophylactic mistakes, general anesthesia indications, implants, second opinion, suspicion of cancer, frenectomy and others (patient's choice, post-operative complication, surgical exposition, allergy test).[15]

At an intermediate minor surgery oral service in London, during the period January 2008-December 2009, referral motives were the following: difficult extractions (40%), extraction of lower third molars (26%), upper third molars extractions (15%), retained root (15%), and others (4%). Untreated patients were re-referred to secondary care, greater complexity services were used, whenever the patient's medical history warranted it. None of the referrals was deemed inappropriate, nevertheless, some extractions that were deemed complex procedures, ended up by being quite simple.[6]

In a survey conducted in the United States of America, 128 Boston University graduate dentists, with no further studies, responded whether they would refer elsewhere clinical case patients. In cases of simple dento-alveolar surgery, 75.5% of all dentists informed they would treat the patient, 16.6% would refer the patient to a dental surgeon, 0.3% to a periodontal specialist, and 7.3% to other specialists. In the case of implant placement procedures, only 10.3% would perform it, most of them (50.1%) would refer the patient to an oral surgeon and the rest (31.0%) would refer the patient to a periodontal specialist. In the case of simple surgery of a medically compromised patient, 46.9% would perform the surgical procedure, 39.1% would

refer the patient to an oral surgeon and 11.7% would refer the patient to a periodontal specialist. In the case of complex surgical procedures in medically compromised patients, only 22.6% would perform the procedure and 75.4% would refer the patient to an oral surgeon.[14]

Reasons for referral were lack of surgical experience; other reasons were lack of required surgical equipment, easy access to specialists, «time consuming surgery» and limited skills to treat medically compromised patients. It is important to mention that female dentists were more prone to refer patients in the case of simple surgeries and implants, whereas in more complex operations differences between genders were not statistically significant.[14]

In the greater area of Manchester, United Kingdom, 74 general dentists answered a survey on minor oral surgery in their practice. Out of the total number who conducted surgeries, 95% used local anesthesia, 21% intra venous sedation, 5% inhalation sedation and 14% general anesthesia. Reasons to refer patients were: anticipation of difficulties during surgery (93%), complex medical history (91%), lack of equipment to achieve general anesthesia (77%), need for a second opinion (66%), lack of patient cooperation (50%), lack of equipment for inhalation sedation (46%), dislike to perform oral surgeries (36%) and others. Procedures they were more inclined to refer were: temporomandibular disorders (92%), third molar extractions (89%), implant placement (85%), biopsies (84%), apicoectomies (72%), frenectomies or other soft tissue surgeries (69%), dental trauma (65%), facial pain (62%), root remnants extraction (39%), tooth extraction with forceps (7%). Locations where these patients were referred to were mainly hospitals, dental surgery services and other general dentists.[2]

At the Oral and Maxillofacial Surgery Department of the Dental University Hospital in Manchester, United Kingdom, during a six month period in 2011-2012, referrals of general dentists of the National Health Service were assessed, it was decided to refer patients to secondary care centers when they exhibited the following characteristics: general anesthesia requirements, surgery complexity (the most frequent reason), uncertainty about diagnosis of soft tissues, lack of equipment to achieve diagnosis, complex medical history, psycho-social reasons (patients with severe phobia for dentists, alcoholics with mental or physical disabilities) and patients with no complications but who were nevertheless chosen for the practice and teaching of undergraduate and graduate students.[3]

At the Maxillofacial and Oral surgery Department of Dublin's Dental College, a study was undertaken on about 100 inter-consultations, but none of them contained all necessary data. Patient data were: name (100%) and address, date of birth gender and telephone number in lesser proportion. Dentist data included name, address, and telephone number in most inter-consultations, E-mail was equally included in a small percentage. No indication was made on details of the patient´s general physician, -very important in cases of patients with complex medical history-. In over half of those inter-consultations, clinical information provided was: motive, clinical findings, specific treatment requested, in less than half, additional information was referral emergency, past medical history, present o past drugs used as well as medical warnings.[25]

In Surrey, United Kingdom, between September 2011 and February 2012, 2% of all inter-consultations for oral surgery procedures was rejected by the Dento-alveolar Referral Service, this percentage is lower than that observed in prior periods, where 4% (May-December) 2011) and 7% (May-December 2010) of all referrals were rejected. Patients whose referrals were rejected had been treated by the same general dentists, another general dentist, or an alternative treatment was conducted. The greatest number of rejected teeth referred for extraction were upper third molars, followed by lower third molars.[26]

In a consultant study of fourth university hospitals in Nigeria, only 6.23% excellent referrals were achieved, followed by 28.25% good, 42.63% adequate and 22.90% poor referrals. With respect to referral letter, 60% of surveyed subjects informed that essentially the following data are included: patient's name, date of referral, patient's address, treatment performed up to the present moment, malignancy or pre-malignancy suspicion, reason for referral, circumstances of the hard tissues, relevant medical history, complaints history, adequate description of complaints and name of the professional treating the case.[27]

Oral and maxillofacial surgeons must meet certain requirements to secure patients; said requirements are, besides surgeon's personal skills and personality, patient´s first impression at the reception room and first telephone contact, appearance of the office and quality of printed material.[28]

POST-SURGICAL COMPLICATIONS AT ORAL SURGERY SERVICES

A low percentage of procedures exhibited complications after surgery. In different services of

the United Kingdom, the most frequent complication was dry sockets, with a 1-2.3% incidence.[4,6,7] Within these, 77% took place after lower third molar extractions, and 1.6% of all patients suffered post-treatment infection. Other post-surgical complications were swelling and pain around sutures (2.4%), four patients suffered hemorrhage after surgery, one patient had to be admitted in hospital because of a serious infection caused by pericoronaritis and another patient was afflicted with temporary paralysis of the facial nerve.[1]

DISCUSSION

Most procedures conducted at oral surgery services are of low complexity. Such is the case of extractions, particularly third molar extractions; dento-alveolar surgeries and surgeries are less common, followed by biopsies, cyst removal and alveolectomies, where difficulty of procedure begins to increase.

In order to meet these requirements, primary, secondary and tertiary care services have been included in these facilities, so as to efficiently provide quality care according to requirements particular to each population.

Although practically all literature reviews coincide in referral and care patterns, the situation differs in African countries. In South Africa and Nigeria most procedures are fracture repair, such as reduction and immobilization and treatment of impacted teeth. In Nigeria differences are due to high violence rates, which frequently generate fractures.[12] Even though South Africa is more developed than the rest of the continent, it is alarming to observe the amount of lesions caused by inter-personal violence as well as gender violence, in addition to traffic accidents, inflicted car lesions and natural disasters. Approximately 3.5 million people seek medical attention each year, at least half of those are victims of violence. In fact, mortality rates due to lesions are almost double than the average world rate.[29] Another possible factor is the financial factor, due to reigning poverty, subjects seek health services only in absolutely necessary cases, so that no preventive measures are undertaken, dental extractions etc, this would explain the low number of reported extractions.

It must be mentioned that in Tanzania there are equally many accidents; for this reason subjects arrive at the health services to receive care for accidents occurred in motorcycles and roads in poor state of repair, but these were not observed in studied data.[11] With respect to surgeries, most were performed with local anesthesia, with the exception of the Hospital in Nigeria where amount of surgeries performed with general anesthesia was considerably greater.[12]

In Sant Cugar del Valles y Valdoreix, Spain, at the general medicine area of two primary care centers, during the five year period included between November 2002-December 2007, most lesions were benign, since malignant lesions were referred to other centers. Besides, according to type of patient as well as surgery, anesthesia with and without vasoconstrictor and topical anesthesia were used.[30] It is possible to prove that this same tendency takes place in the dental field, where most procedures are conducted under local anesthesia, and there are few operated malignant lesions. One factor associated to the fact that these lesions might be referred to other centers is the fear associated to treating this type of lesions as well as the greater care required to perform such surgeries.

When the waiting time to oral surgery services referrals is analyzed, a range of 3 to 6 weeks is observed. In most services this period did not exceed 10 weeks; it was shorter in primary or secondary care centers than in hospital and highly specialized centers. Especially in the United Kingdom waiting list time has been drastically reduced; low complexity oral surgeries are conducted in primary care centers, cases are referred to different car level facilities (primary, secondary, tertiary) according to case complexity and patient's medical history.

At the Sant Cugat del Valles previously mentioned centers, average waiting time was 28 days, differing from the 5-7 years waiting list to perform minor surgeries at a hospital.[30] In this case, the noticeable difference between waiting list in hospital and primary care centers can be clearly observed. This would support United Kingdom's initiative to perform greater amounts of minor surgeries in primary or secondary care centers.

Although most referrals come from general dentists, patients are also referred for surgery by specialized dentists, general practitioners and specialized physicians. Patients have also arrived without prior referral. This could tend to point out that patients are currently more knowledgeable in health subjects, and, on the other hand, there is inter-disciplinary work where the physician, be it general or specialized, includes dentists in their cases.

Taking once more the case of Sant Cugat del Valles y Valdoreix centers, it was observed that 97% of all patients were referred by a general practitioner, 2% by their dermatologist, 1% by their pediatrician, and 1 patient was referred by the surgeon.[30] These data are similar to those occurring in dentistry, where

a great section of patients is referred by the general practitioner or dentist.

Of the total procedures conducted at two primary care centers of the Sant Cugat del Valles y Valdoreix area, 5% suffered complications (1% intra-operative, 4% post-operative).[30] In the south of England, during 2000-2002, in primary and secondary care centers, postsurgical complication after minor surgeries were lesser than 50%; wound infection, discomfort, bleeding and allergy can be counted among these complications.[31]

Post surgical complications in oral surgery procedures were under 5%, the most common cause was dry socket. When compared to previously mentioned minor surgery complications, this percentage is very low, and is similar to data obtained in the area of medicine.

CONCLUSION

Most procedures conducted worldwide in oral surgery services are of low complexity and complications rate. Nevertheless, they are associated to long waiting lists and frequently unnecessary referrals.

Patient transfer to primary care centers seems to be an efficient method to decrease waiting list and service costs. This system is well implemented in general medicine, but only conducted in certain countries in the field of dentistry.

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