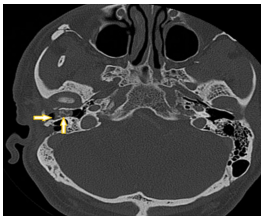

FIGURE 3. Low-power view of the excised mass showing cellular nodules resembling ''cannonballs'' within osseous fragments (hematoxylin and eosin; original magnification, ×100).

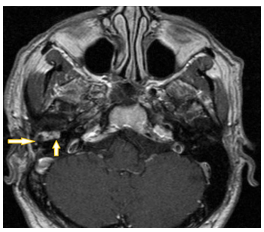

FIGURE 4. Higher-power view showing oval or spindle cells with slit-like luminal spaces (hematoxylin and eosin; original magnification, ×200).

symptoms but may be found incidentally in the asymptomatic cases. With the otoscopic examination, a purple, red, or violaceous vascular mass may be seen in the external auditory canal.[6,8]

Although hemangiomas are benign tumors, recurrence may be seen because these lesions are not capsulated and have infiltrative features. The recurrence in our patient may be due to the infiltrative neoplastic cells remaining among bone lamellas.

Differential diagnoses include attic cholesteatoma with aural polyp, glomus jugulare, granulation tissue, arteriovenous malformation, and carcinoma of the external auditory canal. Pure tone audiometry, CT, and/or MRI may be used in diagnostic evaluation.[9] Computed tomographic scan is the first choice for detecting the size of the lesion and amount of bone infiltration. The exact localization of the tumor and degree of soft tissue involvement is very difficult with MRI because air and bone structures appear black.

The treatment of this lesion is complete excision. The small lesions of external auditory canal, similar to our case, might be treated with transcanal excision.[8] Large lesions extending to the tympanic membrane and mastoid bone might require tympanoplasty, mastoidectomy, or partial temporal bone resection.[6,10] The most important pathologic differential diagnosis in a male adult patient is nodular Kaposi sarcoma, from which tufted angioma is distinguished by its "cannonball" pattern, lack of a significant spindle cell population, and vasoformative reticulin pattern.[4]

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Assessment of the Epidemiological Profile of Patients With Dentofacial Deformities Who Underwent Orthognathic Surgery

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Abstract: The present study aimed to establish the profile of patients who underwent orthognathic surgery in a private clinic by evaluating their demographic characteristics, their facial types, and aspects related to the surgical procedures that were performed. The sample consisted of 419 medical records from male and female patients aged 15 to 62 years who underwent orthognathic surgery between 2001 and 2011. A single examiner collected data by evaluating a database of information extracted from medical records, particularly radiographic and photographic analyses. The following criteria were evaluated: gender, age, skin color, type of orthognathic surgery, type of associated temporomandibular joint (TMJ) surgery, complications, and recurrences. Seventeen patients were rejected because they had incomplete records. The average age of the patients was 28.5 years old; most were females (255 patients) and faioderm (295 patients). The most prevalent facial pattern was Pattern III (n = 166, 41.3%). Orthognathic surgery that affected the maxilla, jaw, and chin was the most prevalent type (n = 199, 49.5% of cases).

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A genioplasty was performed concurrently with combined surgeries and single-jaw surgery in 76.86% of patients (n = 309). TMJ surgery was performed concomitantly with orthognathic surgery in 4% of cases (n = 16). The most common postoperative complication was infection/inflammation (n = 12). We concluded that there was a higher frequency of orthognathic surgery among women and young people, the brunette skin phenotype was prevalent, and most patients had a combination of maxillary and mandibular problems.

Key Words: Malocclusion, orthognathic surgery, epidemiology

Dentofacial deformities have been described as changes that primarily affect the jaws and teeth, although the whole face may also be affected. Such deformities can be isolated to the jaw or they may involve multiple craniofacial structures.[1] In most cases, they are the result of moderate or severe genetic distortions of the normal development process and should be corrected using an integrated treatment of orthodontics and orthognathic surgery in adulthood.[2,3]

As early as 1903, Angle claimed that dentofacial disharmonies in patients with skeletal problems could only be treated with a combination of orthodontics and surgery.[2]

Currently, major advances in diagnostics, planning methods, and surgical techniques have made orthognathic surgery a safe and common procedure for treating dentofacial deformities.[4] Modern fixation techniques (i.e., internal rigid fixation) and improvements in facial esthetics have increased patients' trust in this type of surgery, resulting in an increased demand for orthognathic procedures.[5]

However, there is a lack of data about the epidemiological profile of patients who have undergone orthognathic surgery. Most studies have been limited to evaluating dental occlusion without a consideration for facial features.[4] Some studies have been limited to the prevalence of dentofacial deformities and the specific treatment of a particular type of deformity.[1,5] Scientific studies about the profiles of treatment centers are important for the development of orthognathic surgery and for improving treatment modalities.

Therefore, this study aimed to establish the profile of orthognathic surgery patients at a private clinic in Salvador, Bahia by assessing the patients' demographic characteristics, their facial types, and various aspects related to surgical procedures.

PATIENTS AND METHODS

Using indirect documentary research based on a patient information database, we conducted a retrospective observational study that included a transverse and descriptive profile of patients who underwent orthognathic surgery between January 2001 and September 2011.

Ethical Considerations

The study was approved by the Ethics Committee in Research—IMES (protocol no. 3687) and followed the guidelines of Resolution 196/96 of the National Health Council on research involving humans and the decisions of the Helsinki Convention.

The Sample

The sample consisted of 419 medical records of male and female orthognathic surgery patients aged 15 to 62 years old from a single private clinic in Salvador, Bahia, Brazil.

Data Collection

Data were collected by a single examiner who evaluated a private clinic's database of information extracted from patients' medical records, particularly the photographic and radiographic (panoramic and lateral cephalometric radiographs) analyses. The following criteria were evaluated: gender, age, skin color, type of orthognathic surgery performed, type associated temporomandibular joint (TMJ) surgery, and complications.

Inclusion Criteria

Patients with dentofacial deformities were included if they underwent orthognathic surgery, if all surgical procedures were performed by the same team, if they underwent orthodontic treatment before and after surgery, and if they did not experience postsurgical trauma. Seventeen patients were rejected because their records were incomplete.

Classification Data

Gender was classified as either male or female. The patients were divided into the following groups based on skin color phenotype: leucoderm, faioderm, and melanoderm. For facial typology, we used the Capelozza Filho classification[6]: Standard I, II, III, long face, or short face.

Surgery

The treatments performed were categorized according to the osseous base involved: (1) mandible only; (2) mandible and maxilla; (3) mandible, maxilla, and chin; (4) mandible and chin; (5) maxilla and chin; (6) maxilla only; and (7) chin only. When TMJ surgery was performed simultaneously with orthognathic surgery, the procedures were classified as follows: (1) surgery for articular disc repositioning and (2) surgery to install TMJ dentures.

We also registered the absence or occurrence of postoperative complications. Complicated cases were subdivided into the following categories: infection/inflammation, pseudoarthrosis/unsuccessful bone union, fistulas, and other complications.

Analysis of Results

The data obtained from the exams were tabulated using Excel 2003 and analyzed using the Software R (version 2. 2.14.0). To verify the existence of significant associations between nominal variables, we

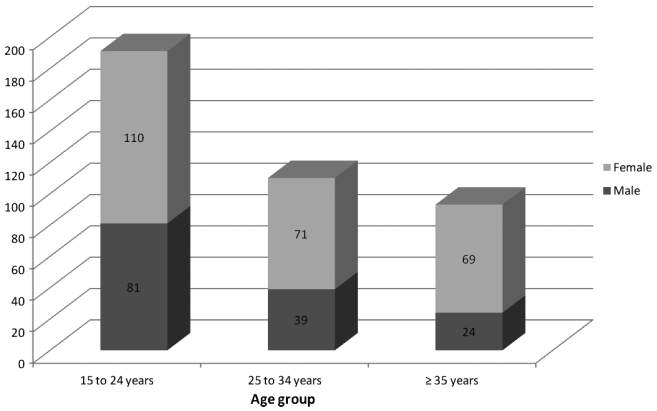

FIGURE 1. Distribution of patients who underwent orthognathic surgery, according to age and gender. Salvador, BA, Brazil, 2001–2011.

TABLE 1. Demographic Characteristics of Patients According to Facial Pattern, Salvador, BA, Brazil, 2001–2011

	Facial Pattern							
	I (n = 17)	II (n = 149)	III (n = 166)	Short (n = 10)	Long (n = 60)	Total		P*
Gender							(%)	0.006
Male	7	39	76	2	23	147	36.6	
Female	10	110	90	8	37	255	63.4	
Skin color							(%)	0.071
Leucoderm	2	25	20	5	12	64	15.9	
Faioderm	15	109	125	4	42	295	73.4	
Melanoderm	0	15	21	1	6	43	10.7	

*Chi-square test.

TABLE 2. Distribution of Patients Who Underwent Orthognathic Surgery, Salvador, BA, Brazil, 2001–2011

Orthognathic Surgery	n	%
Total	402	100
Unimaxillary orthognathic surgery		
Mandible	21	5.0
Maxilla	24	6.0
Chin	7	2.0
Total	52	13
Bimaxillary orthognathic surgery		
Mandible, maxilla, and chin	199	49.5
Mandible and maxilla	48	12.0
Mandible and chin	69	17.0
Maxilla and chin	34	8.5
Total	350	87

used the chi-square test or Fisher exact test. The level of significance chosen for this study was 5%.

RESULTS

The results of this study are presented in figures and tables. The sample consisted of 402 medical records, 36.6% (n = 147) from male patients and 63.4% (n = 255) from female patients. The average patient age was 28.5 years (range, 15 to 62 years). The most populated age range was between 15 and 24 years, with 191 patients total (Fig. 1).

Table 1 presents the patients' demographic characteristics according to their facial pattern. The largest percentage of patients (73.4%; n = 295) had the faioderm phenotype, followed by the leucoderm phenotype (15.9%; n = 64). The most common facial pattern was Pattern III (n = 166, 41.3%), followed by Pattern II (37.1%; n = 149).

Regarding the surgical procedures performed, the mandible was the bone most frequently operated on (84.1%, n = 338). Table 2 shows that the orthognathic surgery involving the mandible, maxilla, and chin was the most common surgical procedure (49.5; n = 199) (Fig. 2). Most of the patients who underwent this type of surgery had Facial Pattern III (38.5%, n = 77), and this association was statistically significant ($P < 0.001$).

Orthognathic surgery involving only the maxilla was the most frequently performed unimaxillary surgery (n = 24; Fig. 3). Genioplasty, as either a combined or mandible-only intervention, was performed in 76.86% of patients (n = 309).

TMJ surgery combined with orthognathic surgery was performed in 4% of cases (n = 16). Of these, 3 underwent TMJ reconstruction with a TMJ Concepts total prosthesis (TMJ Concepts Inc., Ventura, CA, USA), and 13 patients underwent repositioning of the articular disc.

Table 3 shows the occurrence of complications, which affected 4.6% of patients (n = 19). The most frequent postoperative complication was infection/inflammation (n = 12), which was more prevalent among female patients and those aged 15 to 24 years. All patients who had some type of complication had previously

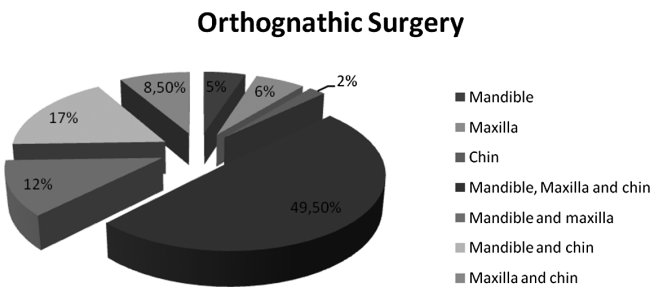

FIGURE 2. Distribution of patients who underwent orthognathic surgery. Salvador, BA, Brazil, 2001–2011.

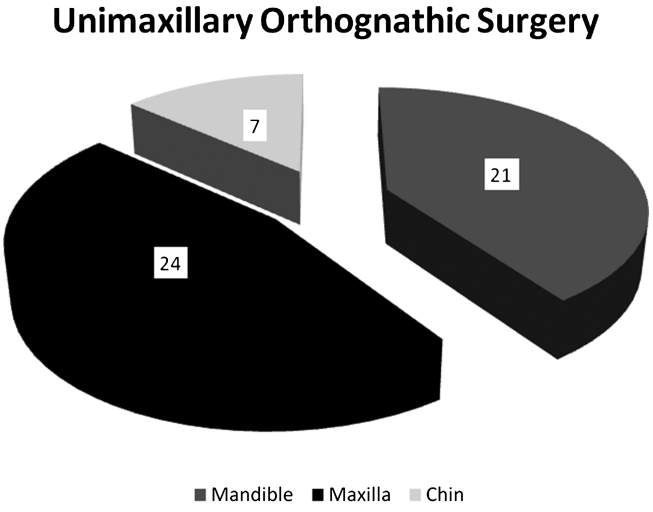

FIGURE 3. Distribution of patients who underwent unmaxillary orthognathic surgery. Salvador, BA, Brazil, 2001–2011.

TABLE 3. Demographic Characteristics of Patients and Type of Surgery Performed, According to the Presence of Postoperative Complications, Salvador, BA, Brazil, 2001–2011

	Complications										
	No Complications		Infection/ Inflammation		Inadequate Union		Fistula		Other		
	n	%	n	%	n	%	n	%	n	%	*P**
Gender											0.289
Male	141	95.9	2	1.4	1	0.7	2	1.4	1	0.7	
Female	242	94.9	10	3.9	2	0.8	1	0.4	0	0	
Age											0.190
15 to 24 years	184	96.3	6	3.1	1	0.5	0	0	0	0	
25 to 34 years	106	96.4	1	0.9	1	0.9	2	1.8	0	0	
35 to 44 years	53	93.0	2	3.5	1	1.8	1	1.8	0	0	
45 to 54 years	33	91.7	2	5.6	0	0	0	0	1	2.8	
>55 years	7	87.5	1	12.5	0	0	0	0	0	0	
Surgery performed											
Maxilla	286	93.8	12	3.9	3	1.0	3	1.0	1	0.3	0.175
Mandible	330	97.6	6	1.8	1	0.3	1	0.3	0	0	<0.001
Chin	301	97.1	5	1.6	0	0	3	1.0	1	0.3	<0.001

*Chi-square test.

undergone maxilla surgery, either alone or combined with mandible and genioplasty surgery.

DISCUSSION

Orthognathic surgery is indicated to correct bone base discrepancies associated with corrective orthodontic treatment. It is estimated that a large number of patients require surgical orthodontic treatment.[7,8]

All 402 patients analyzed in this study suffered from some type of severe dentofacial deformity that could not only be treated orthodontically. The fact that this study took place in a treatment center for patients with facial deformities justifies the large number of orthognathic surgeries performed.

In a similar study on the profile of orthognathic surgery patients in a medical school setting, Marques et al[9] found a mean age of 28.7 years and a slight prominence of females. Likewise, in a study of the spectrum of dentofacial deformities and treatment in an Asian population, Chew[4] observed a female prevalence and a mean age of 24 years. In this study, there was a predominance of female gender and young adults, with a mean age of 28.5 years. The literature indicates that young patients and women express greater concerns about aesthetics, while older people are less inclined to undergo surgery and are more concerned about the surgical risks.[1,10]

Scariot et al[5] conducted an epidemiological analysis of 195 orthognathic surgeries performed in a hospital in southeastern Brazil and found a prevalence of white patients. Our findings differ from these results. We found a higher number of patients with the brunette skin phenotype (73.4%), which can be explained by the marked racial variation in the studied region.

Capelozza Filho[6] stated that based on a morphological evaluation of the face, individuals can be classified as Pattern I, II, III, short, or long face. Pattern I is identified by a normal facial and sagittal balance between the jaws, although the patient may present asymmetries. Malocclusion, when present, is only dental and is not associated with any sagittal, vertical, or skeletal discrepancy. Patterns II and III are characterized by a sagittal step between the maxilla and mandible that is positive or negative, respectively. In the long and short face patterns, the discrepancy is vertical. In patients with skeletal deformities, the malocclusions are usually consequences of these discrepancies. This study found that Facial Pattern III occurred most frequently (41.3%), followed by Pattern II (37.1%). The short face pattern was less frequent (2.5%), which can be justified by the strong racial mixing in the studied area, which favors the occurrence of mandibular prognathism with vertical excess.

There was a significant prevalence of Pattern III, which can be partially justified by the great frequency with which patients with this deformity seek surgical correction.

Most of the patients had jaw problems associated with maxillary defects (61.4%, n = 247). Another important finding of this study was the high frequency of chin surgery (76.86%, n = 309), either isolated or associated with maxillary or mandibular surgery. This draws attention to the need for a detailed and accurate diagnosis and a detailed facial analysis to achieve satisfactory functional and aesthetic results.

This study found a low rate of postoperative complications (4.6%). The most common complication was infection/inflammation. In the work of Ong,[1] infection was the second most common complication, with an incidence of 15%. This author believes that the risk factors for postoperative infection include the surgery duration, type or degree of surgical trauma, ischemia, use of alloplastic implants, and bacterial contamination.

Our results indicate that there was a higher frequency of orthognathic surgery among women and young people and a prevalence of patients with faioderm phenotype, and most patients had a combination of maxillary and mandibular problems.

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Maxillary Sinusitis After Sinus Lift Due to *Gemella morbillorum*: Antibiotic and Surgical Treatment

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Abstract: Sinus lift is a predictable procedure for increasing alveolar bone height in the posterosuperior alveolar regions to allow oral prosthetic rehabilitation. Several complications have been documented in the literature and vary from sinus membrane perforation to maxillary rhinosinusitis. The authors present a case of *Gemella morbillorum* acute sinusitis after sinus lift surgery. The purpose of this report is to describe the surgical and pharmacological management of a patient allergic to penicillin.

Key Words: Maxillary sinusitis, maxillary sinus floor augmentation, endoscopy, antibiotic therapy, *Gemella morbillorum*

Insufficient bone volume is a common problem encountered in rehabilitation of the edentulous posterior maxillae with implant-supported prostheses. Bone volume is limited by the presence of the maxillary sinus together with loss of alveolar bone height. Sinus lift procedures[1] increase bone volume by augmenting the sinus cavity with autogenous bone and/or bone substitute biomaterials. Maxillary sinus surgery is a reliable and predictable treatment option for the prosthetic rehabilitation of the atrophic maxilla. Nevertheless, these interventions are not riskless of intraoperative and postoperative complications. Postoperative complications can be serious and involve adjacent anatomical structures; such complications include infection, sequestration of bone, and maxillary sinusitis. Sinus lift procedures are the main etiological factor in odontogenic maxillary sinusitis in several reports. Microbiological findings[2,3] indicated that specimens from maxillary sinusitis were polymicrobial; both aerobes and anaerobes were isolated from patients with odontogenic sinusitis. The predominant aerobes were *Staphylococcus aureus* and *Streptococcus pneumoniae*, while the more frequent anaerobes were *Peptostreptococcus* species and *Prevotella* species. *Haemophilus influenzae* and *Moraxella catarrhalis* were absent in sinusitis associated with a dental origin.

We present a case of maxillary sinusitis after sinus lift surgery due to *Gemella morbillorum*, a gram-positive, facultative anaerobic, catalase-negative cocci.

CLINICAL REPORT

A 62-year-old female patient, penicillin allergic, had maxillary sinusitis after a monolateral sinus augmentation with autologous and homologous bone. The symptoms (persistent swelling, low-grade fever, and pus leakage from the mucosal wound) were persistent despite 15 days of postoperative antibiotic therapy (clarithromycin, 500 mg every 12 h orally) and abscess drainage on the seventh postoperative day. At first observation, the patient had a computed tomography (CT) scan that showed a flogistic process and shed grafting material in the maxillary sinus. Laboratory examination revealed a leukocyte count of 7280 cells/m^3, and C-reactive protein (CRP) was 2.54 mg/dL. No predisposing factors of infection were detected (eg, diabetes mellitus and alcohol abuse). Management included antibiotic coverage [levofloxacin, intravenous (iv), 500 mg twice daily], endoscopic surgery with ostium enlargement, and an endoral approach of the sinus with full enucleation of the graft used for sinus floor augmentation and diseased tissue. The patient was instructed to use a saline nasal rinse solution twice daily for the following 10 days and an antibiotic nasal cream twice daily for 5 days. After results of an antibiogram and an infectivologist consult, a combination of antibiotics was planned: vancomycin, iv, 1 g twice daily and rifampicin, iv, 600 mg daily for 15 days, after a cerebral CT that excluded encephalic involvement. No infection relapse was detected at a 6-month clinical and CT control follow-up.

DISCUSSION

The maxillary sinus grafting procedure is performed to restore an amount of alveolar bone sufficient to allow successful implant placement and subsequent prosthetic reconstruction. However, the procedure has a well-known impact on the delicate homeostasis of the maxillary sinus[4]; the concomitant presence of systemic, nasosinusal, or maxillary sinus disease may favor the development of postoperative complications (particularly maxillary rhinosinusitis), which can compromise a good surgical outcome. Maxillary sinusitis after a sinus lift procedure may be caused by lack of asepsis during the surgical procedure, dysventilation of the maxillary sinus as a result of ostial obstruction due to mucosal edema, infection of nonvital bony fragments floating into the sinus, or a previously undetected disease resulting in impaired maxillary drainage.[5] In case of persistence of the symptoms of a normal postoperative course over 3 weeks after sinus lift, collection of pus or purulent exudate leaking out of the wound, and lost/penetrated grafts in the maxillary sinus, a multidisciplinary approach is advisable to decide the best therapeutic strategy.[6] A surgical approach is recommended, in

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