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CASE REPORT

RARE ODONTOSTOMATOLOGY COMPLICATION ASSOCIATED WITH DISLOCATION OF A SILASTIC NASAL SPLINT: A CASE REPORT

Francesco Litta,¹ Lucia Memè,³ Filippo Grilli,¹ Enzo Iacomino,¹ Fratini Chiara,² Fabrizio Bambini,^{3*} Stefano Mummolo¹

¹ Department of Life, Health and Environmental Sciences, Università degli Studi dell'Aquila, 67100 L'Aquila, Italy

² Department of Sense Organs, Sapienza University of Rome, Viale del Policlinico 155, 00186, Rome, Italy

³ Department of Clinical Sciences and Stomatology, Polytechnic University of Marche, Ancona, Italy

* Corresponding author: Prof. Fabrizio Bambini, Associate professor in Oral Surgery and Implantology, School of Dentistry at Polytechnic University of Marche;
e-mail: f.bambini@staff.univpm.it

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Abstract

Silastic is a type of silicone elastomer that has been widely used in various medical applications. One of its popular uses is in aesthetic medicine, specifically as an implant in the nose to enhance its appearance. The potential complications of extrusion, infection, and migration are minimal if the implant is placed in a separate watertight compartment with a tension-free closure and no impingement of the nasal dome. In this Case Report the patient arrived with a periodontitis disease and the silastic sheet was found adjacent to the incisor teeth during oropharyngoscopy to treat acute periodontitis. The authors do not know if the silastic sheet was the direct cause of the acute periodontitis or if the periodontitis creates the migration the infection and the extrusion of the implant. It is possible that the silastic sheet used in the previous rhinoplastic surgery reconstruction had migrated to the perimeter of the premaxilla and induced the chronic inflammation around the teeth or more probably some conditions such as initially gingivitis, complicated on Periodontitis precipitated the acute purulent inflammation of the periodontal tissue and followed by implant extrusion, foreign body reaction, and infection.

Keywords: dental complication, nasal splint, dislocation of silastic.

Introduction

Several materials, both biologic and alloplastic, have been used for nasal augmentation. Although biologic bone and cartilage grafts are associated with lower infection rates, they are also associated with long-term resorption and donor-site morbidity.

Alloplastic materials, in particular silicone, have been associated in the literature with extrusion and infection but have the advantages of being affordable and easy to reshape with no requirement for harvesting autografts.¹ There are a variety of techniques that can be used to enhance or improve the nasal tip. These techniques often use suture techniques and invisible

grafts to achieve the desired result as Columellar Strut² or Silastic implant³ or without graft.⁴ The former methods have been well described throughout the literature. The potential complications of extrusion, infection, and migration are minimal if the implant is placed in a separate watertight compartment with a tension-free closure and no impingement of the nasal dome.⁵ Nevertheless, each method presented various complications⁶ and especially regarding Silastic. Silastic is a type of silicone elastomer that has been widely used in various medical applications.

One of its popular uses is in aesthetic medicine, specifically as an implant in the nose to enhance its

appearance. Silastic is a highly cross-linked polymer that is composed of a silicone elastomer. It has high tensile strength, good tear resistance, and is highly resistant to temperature changes, making it an ideal material for medical implants. Silastic is also highly biocompatible, meaning that it does not cause any harmful reactions when implanted in the body. This makes it a suitable material for use in aesthetic medicine.⁷ A silastic sheet is made from a Dacron mesh that is added to silicone, and has been used in the surgical sections for various purposes including Ent surgery for Septal surgery or Septoplasty.⁸

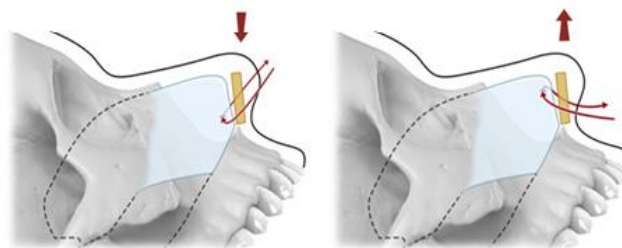


Figure 1. Different types of sutures in the volume augmentation technique with silastic implant support

Case Report

On 03.12.2022 at 5:30 p.m., a 37-year-old patient presented to our observation, who reported pain for about two months and gingival hyperemia with the presence of aphthae in the upper jaw region. On E.O., perforation of the gingival fornix extended between 1.3 and 2.3, leakage of exudate and purulent material and presence of mobile silastic membrane placed about 2 years ago during a corrective rhinoplasty surgery made in Turkey. The opt notes an area of confluent osteolysis between 1.3, and 1.4 and 2.6, periodontitis sloughing of 2.1 and residual root of 1.1, absence of 1.2 and 3.7. Mucosal basisinus thickening of the maxillary sn. We proceeded to perform a second-level radiographic examination, Tc survey of the maxillary upper jaw shows, confluent periapical osteolysis interesting the periodontal of 1.3 and 1.4 with district lifting of the basisinus floor and disruption of continuity of the basisinus bone limiting. Vestibular bony cortical reabsorption and corresponding alveolar wall area 13-23. Defect of substance at fingernail strike of the perspicacity of 22. The patient returns to our observation after 5 days

after performing antibiotic injection therapy with Ceftriaxone 1g x 2 and Metronidazole 250g 1x 3. We proceed to partial removal of the Silastic membrane by access from the gingival fornice, remove mucosal adhesions and perform washings with Rifampicin Sodium. Given the impossibility of performing a complete suture because of the altered anatomy and poor mucosal quality, we prefer to let healing occur by second intention. Postoperative checkup after 8 days, absence of exudate, color and consistency of the mucosa have markedly improved, and the site appears to be healing. The patient unfortunately did not show up for follow-ups.



Figure 2. Perforation of the gingival fornix and presence of mobile silastic membrane



Figure 3. The Silastic membrane removed

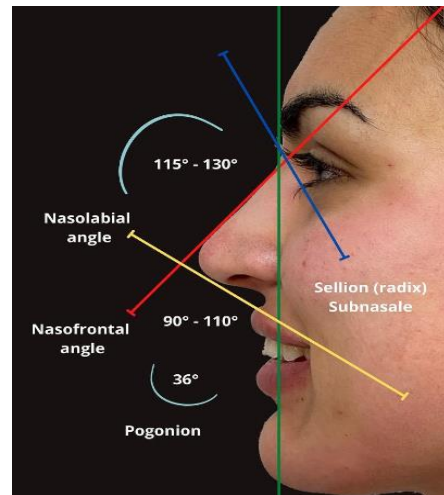


Figure 4. Aesthetic facial harmony ideal angles

Discussion

Rhinoplasty is a surgical process to reshape the nasal skeleton which results in changed underlying structures so that the form and function of the nose will improve. Most rhinoplasty surgeries are performed to improve nose appearance for cosmetic reasons, whether reducing nose size, projection, altering shape, smoothing a hump, adding volume to a flat bridge, or altering size and shape of overlarge nostrils. Facial beauty is related to balance and the symmetry of different parts of the face, including the nose and the premaxilla. As the nose as the premaxilla, in the frontal view, are important regions that constitute. The midface region and play an important role in aesthetic facial appearance.^{9,10} The premaxilla is the region between the maxillary incisor fissures consisting of the anterior central maxilla and overlying soft tissues.¹¹ It extends from the inferior edge of the maxilla to the base of the columella.

To achieve aesthetic facial harmony there are ideal angles we work towards achieving, though these must be treated as guides & ultimately the result will be determined by the patient goals. The premaxilla needs to be at or slightly ahead of a vertical line drawn from the pogonion.

Premaxillary augmentation is an excellent adjunct for rhinoplastic techniques and can enhance the profile harmony, a goal of both rhinoplasty and genioplasty.¹²

It improved nasal projection, addresses the nasal base, upper lip, and nasolabial angle; it offers a solution as an important adjunct to rhinoplasty, for excessive Gingival exposure and for Retrusion of the premaxilla, a common problem in facial plastic surgery, affecting both the profile and frontal views. Premaxillary augmentation may be achieved with surgical implants.¹³ These may be classified as autografts, homografts, and alloplasts. Many different implants are available for nasal reconstruction including Proplast, cartilaginous autografts, and osseous autografts, among others, each with varying degrees of success, but above all the use of a bat shaped Silastic (Implantech, Ventura, California) or Silastic sheets implant was discussed, and the merits of its excellent aesthetic outcomes highlighted. However, no ideal implant currently exists. Implants may also be inserted over the central upper lip anterior to the maxilla to achieve maxillary augmentation in combination with the aforementioned changes to nasal appearance. Caronni was the first to describe the use of a Silastic implant in correcting the nasolabial angle, as well as pointing out its utility as a rhinoplasty adjunct.¹⁴ The implant used in our case report is made of Silastic sheet. A silastic sheet (silicone elastomer: Polydimethyl Siloxane, Dow Corning Ltd, Midland, MI) is silicone that is strengthened with a Dacron mesh and has tensile strength and elasticity over a relatively large area. These implants may be placed strategically into various anatomic sites to achieve different cosmetic goals. Implants may be placed between the anterior maxillary spine and the posterior

end of the medial crura as a plumping graft to enhance nasal projection and to improve the nasolabial angle. Alternatively, a columellar strut may be inserted to increase projection, provide more structural support, and possibly alter the columellar-alar relationship. These implants may be inserted via many different incisions. For example, a plumping graft may be inserted via an intranasal incision, external rhinoplasty incision, or sublabial incision. For The surgical technique for Premaxillary augmentation using the silastic sheet implant can be approached either intranasally or intraorally.

1. *Intranasal approach*

A generous 1.5 cm incision is made in the right nasal vestibule. The incision begins vertically, runs behind the caudal part of the columella, then continues horizontally along the floor of the right vestibule. The incision is deepened to the bone of the nasal spine. A subperiosteal elevator is then used to dissect left and right tracts along and beneath the alar bases, extending a few millimeters beyond the bases laterally and inferiorly. The right pocket is held open with a Senn retractor, while the right end of the implant is introduced with an Adson-Brown forceps. The same procedure is then repeated on the left side. The central body is inspected to ensure a central position on the nasal spine. Closure is completed with two 4-0 chromic sutures.

2. *Intraoral approach*

A vertical midline incision is made in the superior gingival-buccal sulcus. At this point, the identical steps for dissection and implant insertion are carried out as previously stated. The native characteristics of Silastic make it the ideal choice when using a synthetic implant. Silastic is a readily available, biocompatible, easily shaped, easily removable, and inexpensive material. Surgeons have used it widely to reconstruct a defect in bone, cartilage, and connective tissue after trauma, inflammation, and tumor but it is subject to displacement and infection. However, several complications of the silastic sheet have been reported. These are: adhesion.¹⁷

In addition, displacement and migration, as in our case, has also been reported. In rhinoplasty surgery, grafting has become the most widely used technique

as well as suture techniques, it is widely regarded as one of the more technically challenging surgeries, owing in part to the many possible short- and long-term complications that can arise.¹⁶ However, complications fall into two categories: aesthetic and nonaesthetic. Of the nonaesthetic complications, infection has the widest span of severity.¹⁸ In this case the patient arrived with a periodontitis disease. Periodontitis is one of the most common diseases associated with the oral cavity. Periodontitis is a disease of the tissue surrounding the tooth structure. The disease is affected by both local as well as systemic etiological factors. All the cases of gingivitis do not progress into cases of periodontitis as it depends on the host response. Periodontitis can be broadly classified into chronic and aggressive periodontitis. Cases of chronic periodontitis (CP) are associated with a plethora of plaque and calculus. While the characteristic feature of aggressive periodontitis (AgP) is the familial aggregation of disease, increased amount of periodontal destruction with minimal local factors. AgP further classifies as local aggressive periodontitis (LAP) and generalized aggressive periodontitis (GAP). Gingivitis is the initial stage of the response of the body towards local factors present in the oral cavity; this is a reversible process without the loss of any bone or periodontal support. There are three histopathological stages of gingivitis: initial lesion, early lesion, and established lesion. Further inflammatory changes in the gingiva lead to the establishment of periodontal disease by the transition of the established stage to the advanced stage. The spread of inflammation from epithelium to connective tissue takes place laterally and apically resulting in the destruction of collagen fibers. This destruction of collagen fibers presents clinically as "attachment loss" marking the shift from gingivitis to periodontitis. In rhynoplastic Infection this is the most common complication that always warrants thread removal, and the main risks of autogenous transplants are dislocation and resorption, while alloplasts can cause infection and extrusion.¹⁹ In this respect silicone implants can have a complication rate between 5-20%. Gingivitis that is complicated on periodontitis can spoil tissue surrounding the tooth structure and make an infection of surgical implant used for rhinoplasty.²⁰ Infection can occur years after the initial procedure and alloplastic implant complications are the most

common reason for revision rhinoplasty above all in Asia.²¹⁻²² In this case, the silastic sheet was found adjacent to the incisor teeth during oropharyngoscopy to treat acute periodontitis. The authors do not know if the silastic sheet was the direct cause of the acute periodontitis or if the periodontitis creates the migration the infection and the extrusion of the implant. It is possible that the silastic sheet used in the previous rhinoplastic surgery reconstruction had migrated to the perimeter of the premaxilla and induced the chronic inflammation around the theet or more probably some conditions such as initially gengivitis, complicated on Periodontitis precipitated the acute purulent inflammation of the parodontal tissue and followed by implant extrusion, foreign body reaction, and infection.²³ However, although there is a connection and a link in both options, there is some connection, further investigation will be needed to determine the mechanism in this case.

Conclusions

Initial management of an infected implant relies on early recognition of these signs and initiation of antibiotics are the mainstay of treatment.²¹ In rare circumstances, an alloplastic implant may be salvaged with early aggressive antibiotic therapy, but surgical removal is almost always necessary.

In this case we show how a periodontitis can destroy periodontal tissues and create an extrusion of silastic implant, so a copious irrigation with

Rifampicina and antibiotic therapy and was useful not to get safe the implant, but to help the

1 factor, as well as the bacterial load of periodontopathogens, require reduction along with the correction of behavioral factors such as cessation of smoking and tobacco consumption is a part of periodontal treatment.

Declarations

Conflict of interest and financial disclosure

The author declares that he has no conflict of interest and there was no external source of funding for the present study. None of the authors have any relevant financial relationship(s) with a commercial interest.

Ethical approval

Research protocol was approved by the local Ethical Committee (2018/23) and in accordance with those of the World Medical Association and the Helsinki Declaration.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Source of Funding

Non funding.

Availability of Data and Materials

Not applicable.

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ՕԴՈՆՏՈՍՏՈՄԱՏՈԼՈԳԻԱՅԻ ՀԱՉԱՎԱԳԵՊ ԲԱՐԴՈՒԹՅՈՒՆ ԿՎՊՎԱԾ ՔՌԱՅԻՆ ՍԻԼԱՍՏԱՍՏԻՆ ԹԻԹԵՂԻ ՀԵՏ

Ֆրանչեսկո Լիտա,¹ Լյուսիա Մեմե,³ Ֆիլիպո Գրիլի,¹ Էնցո Յակոմինո,¹ Ֆրատինի Կիարա,² Ֆարրիցիո Բամբինի,³ Ստեֆանո Մումոլո¹

- ¹ Կյանքի, առողջության և շրջակա միջավայրի գիտությունների բաժին, Università degli Studi dell'Aquila, 67100 L'Aquila, Իտալիա
- ² Չգայական օրգանների բաժին, Հռոմի Սապիենցա համալսարան, Viale del Policlinico 155, 00186, Հռոմ, Իտալիա
- ³ Կլինիկական գիտությունների և ստոմատոլոգիայի ամբիոն, Մարկեի պոլիտեխնիկական համալսարան, Անկոնա, Իտալիա

Ամփոփում

Սիլաստիկը սիլիկոնային էլաստոմերի տեսակ է, որը լայնորեն օգտագործվում է տարբեր բժշկական կիրառություններում: Նրա հայտնի կիրառություններից մեկը էսթետիկ բժշկության մեջ է, մասնավորապես որպես իմպլանտ քթի մեջ՝ արտաքին տեսքը բարելավելու համար: Էքստրուզիայի, վարակի և միգրացիայի հնարավոր բարդությունները նվազագույն են, եթե իմպլանտը տեղադրվի առանձին անջրանցիկ խցիկում, առանց լարվածության փակման և առանց քթի գմբեթի ներթափանցման: Այս դեպքի զեկույցում հիվանդը ժամանել է պարոդոնտիտի հիվանդությամբ, և սուր պարոդոնտիտը բուժելու համար օրոֆարինգոսկոպիայի ընթացքում հայտնաբերվել է կտրող ատամների մոտ գտնվող սիլաստիկ թերթիկը: Հեղինակները չգիտեն, թե արդյոք սիլաստիկ թաղանթն է եղել սուր պարոդոնտիտի անմիջական պատճառը, թե՞ պարոդոնտիտը առաջացնում է միգրացիան՝ վարակը և իմպլանտի արտամղումը: Հնարավոր է, որ նախորդ ռինոլաստիկ վիրաբուժության վերականգնման ժամանակ օգտագործված սիլաստիկ թիթեղը տեղափոխվել է պրեմաքսիլայի պարագիծ և առաջացրել ատամների շուրջ քրոնիկական բորբոքում կամ, հավանաբար, որոշ պայմաններ, ինչպիսիք են սկզբնական զինգիվիտը, պարոդոնտիտով բարդացած, առաջացրել է ատամների սուր թարախային բորբոքում: պարոդոնտալ հյուսվածք, որին հաջորդում է իմպլանտի արտամղումը, օտար մարմնի ռեակցիան և վարակը:

РЕДКОЕ ОДОНТОСТОМАТОЛОГИЧЕСКОЕ ОСЛОЖНЕНИЕ, СВЯЗАННОЕ С ВЫВИЖОМ СИЛАСТИЧНОЙ НАЗАЛЬНОЙ ШИНЫ: СЛУЧАЙ СЛУЧАЯ

Франческо Литта,¹ Лючия Меме,³ Филиппо Грилли,¹ Энцо Якомино,¹ Фратини Кьяра,² Фабрицио Бамбини,³ Стефано Муммоло¹

- ¹ Факультет наук о жизни, здоровье и окружающей среде, Университет дельи Студи дель Аквила, 67100 Л'Аквила, Италия
- ² Кафедра органов чувств, Римский университет Сапиенца, Viale del Policlinico 155, 00186, Рим, Италия
- ³ Кафедра клинических наук и стоматологии, Политехнический университет Марке, Анкона, Италия

Аннотация

Силастик — это тип силиконового эластомера, который широко используется в различных медицинских целях. Одно из его популярных применений — в эстетической медицине, в частности, в качестве имплантата в нос для улучшения его внешнего вида. Потенциальные осложнения, связанные с экструзией, инфицированием и миграцией, минимальны, если имплантат размещается в отдельном отофарингоскопии при лечении острого пародонтита рядом с резцами был обнаружен силосный лист. Авторы не знают, был ли

силиконовый лист непосредственной причиной острого пародонтита или пародонтит вызывает миграцию инфекции и выдавливание имплантата. Возможно, что силиконовый лист, использованный в предыдущей реконструкции ринопластической операции, мигрировал по периметру предчелюстной кости и вызвал хроническое воспаление вокруг зубов или, что более вероятно, некоторые состояния, такие как первоначальный гингивит, осложненный пародонтитом, спровоцировали острое гнойное воспаление верхней челюсти. ткани пародонта с последующей экструзией имплантата, реакцией на инородное тело и инфекцией.