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UPDATE IN PLASTIC SURGERY

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Late recurrent inflammation and migration of polyalkylamide gel for pectus excavatum: a case report



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Summary

Late recurrent inflammation and migration of polyalkylamide gel for pectus excavatum: a case report

Bio-Alcamid is permanent filler composed by water (96%) and polymeric polyalkylamide (4%). This material has widely been employed for aesthetic contour defects, rhytides and lipodystrophy. The filler is stable and acts as an "endoprosthesis" due to the fibroblasts that create a thin fibrous capsule in few weeks.

Although the short-term follow-up displayed few complications, literature showed an increasing number of long term complications. These include recurrent inflammation and swelling, migration and infections even more than one year after injection.

We describe the case of a 31 year-old man affected by pectus excavatum that underwent polyalkylamide gel infiltration for correcting the contour defect. In few years he experienced a caudal migration of the filler. After a first attempt of partial percutaneous aspiration of the filler, he displayed recurrent episodes of inflammation and local swelling without infection. We therefore indicated the surgical removal of the mass. The patient healed uneventfully.

Although the procedure is easy and large quantities could be injected in outpatient without the necessity of any donor site, the practitioner should be aware of the high rate of complications of the polyalkylamide gel and others permanent fillers.

KEY WORDS: Polyalkylamide, Pectus excavatum, Inflammation, Migration, Permanent filler

Introduction

The polyalkylamide gel (Bio-Alcamid, Polymekon, Italy) is a permanent filler composed by water (96%) and synthetic polymeric polyalkylamide (4%). The polymer derives from the acrylic acid and has a reticulated structure.

This permanent filler is non-toxic, hydrophilic, easy to inject and permanent. The gel is stable, resistant to hydrolysis and creates an "endoprosthesis" due to the activity of fibroblasts that form a thin fibrous capsule around the material that is completed by six weeks. No significant giant cell reaction is usually observed¹.

This formulation was used in Europe since CE approval in 2001 for aesthetic purposes and for HIV/HAART-related lipodystrophy. In Canada was authorized initially for lipodystrophy. In the United States the use was limited to the Parry-Romberg syndrome, while later the approval was withdrawn².

The polyalkylamide gel became popular for the correction of rhytides, minor aesthetic defects and major contour deformities. The ease of use and the "endoprosthesis" effect initially induced the employ also for corrections that required injections of large volumes (> 500 ml). This filler was often proposed as alternative to the autologous fat grafting because avoided any donor site morbidity and the procedure could be performed in outpatients even for large volumes. This filler was also proposed as tamponading agent for vitreous hemorrhage although the gel caused

functional and morphological retinal damage in the animal model.

Although the first positive reports that recorded only minor local complications the patients treated with Bio-Alcamid displayed a high rate of complications, arising from 24 hours to 3 years after injection³.

The complications include surface irregularity, infection and skin hyperpigmentation. Complications are observed even more than one year after injection, such as inflammatory nodules, inflammatory reactions, migration and infection.

A large retrospective study by Schelke⁴ analyzed retrospectively 3196 over 6 years of time span. The study observed that 4.8% of patients developed a complication, comprising inflammation (3.3%), accumulation (1.5%), hardening of the capsule (0.4%) and migration (1.1%).

Case report

In this article we describe the case of a 31-year-old man that underwent the injection of polyalkylamide gel for the correction of pectus excavatum in 2003. Four years after the injection he observed a caudal migration of the material. Therefore in 2007 he was suggested to undergo a remodeling of the injected material by aspiration with liposuction cannulas. The contour defect was corrected and the post-operative was uneventful. Nonetheless in

2014 he experienced recurrent inflammations of the area, further migration of the material and cutaneous retraction. Therefore he was referred to us. He was studied with T1, T2, DWI and FIESTA weighted MRI using fat suppression. The imaging revealed the permanent filler in the subcutaneous layer over sternum and xiphoid process, extended for 15 x 13 cm, 4.5 cm thick. The peripheral component had irregular margins with septa. The mass was surgically removed through a caudal incision and showed thin septa. The material had an incomplete capsule.

No evidence of infection was observed. The histological examination of the removed material revealed chronic granulomatous inflammation. No complications were observed in the post-operative period.

Discussion

Late complications after *Bio-Alcamid* injections are described in literature. These include local inflammation, infections, swelling, ulcerations and filler

migration, often arising even one year after infiltration. Moreover, as long as the infiltration of *Bio-Alcamid* was electively performed for HAART/HIV-induced lipodystrophy, an high number of immediate and late-onset filler infection was reported. *Nadarajah* reviewed 167 patients that underwent *Bio-Alcamid* infiltration for HIV-related lipodystrophy, recording documented infections in 19% of patients⁵. Our patient experienced recurrent inflammatory episodes with local redness and tenderness although secretions or skin ulceration were not observed.

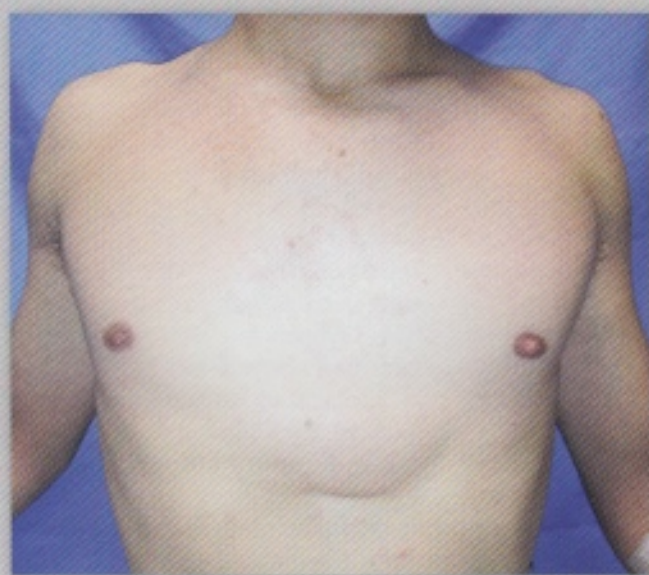
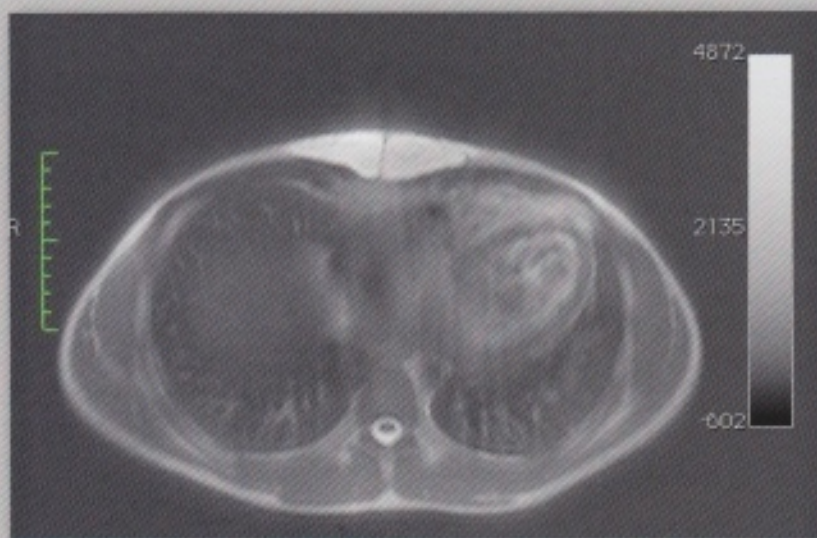


Figure 1.

31-year-old man affected by pectus excavatum. The contour deformity was corrected with polyalkylimide gel in 2003. Four years after the injection he observed a caudal migration of the filler and underwent partial percutaneous aspiration of the material. The contour defect was corrected and the post-operative was uneventful. Nonetheless in 2014 he observed recurrent inflammations of the area, further migration of the material and cutaneous retraction.

Figure 2.

The imaging revealed the permanent filler in the subcutaneous layer over sternum and xiphoid process, extended for 15 x 13 cm, 4.5 cm thick. The peripheral component had irregular margins with septa).



The patient already underwent in another hospital a suction of the material. This technique was reported in literature by Khan et al.⁶ that described a successful extraction of Bio-Alcamid with large-bore liposuction cannula (3.7 mm) with Mercedes tip. Nevertheless we decided to surgically remove the permanent filler avoiding the persistence of residual gel and further complications. Moreover histological and cultural examination of the specimen could be performed. The mass could be effectively visualized with T2-weighted MRI using fat suppression (SPIR). Ultrasonography is not

advised due to the inferior specificity in comparison with MRI.

The histological examination revealed inflammation with foreign body-type granulomas.

The surgery was carried uneventfully and no complications were reported in the following months.

Conclusion

The use of Bio-Alcamid in cosmetic surgery was extended. The filler

was considered ideal for correct small and larger contour defects as outpatient procedure, often in alternative to the autologous fat grafting.

Although the initial enthusiastic reports on this filler, the long-term follow-up revealed high rates of recurrent local inflammations, infections and migrations. These complications required removal of the material and antibiotic therapy if needed.

We therefore we discourage the employ of the polyalkylamide gel and advise caution using permanent fillers.

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Cephalometric analysis to evaluate rhinoplasty in Arabs



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Summary

Cephalometric analysis to evaluate rhinoplasty in Arabs

As Middle Eastern rhinoplasty patients has common criteria in both in their original shape and desired nasal morphology and lack of studies concern in documentation for the changes that occur for the nose after rhinoplasty. That is motivated us to do this study with an aim to compare the statistical data for cephalometric measurements of nasal aesthetics of Arab males and females before and after rhinoplasty.

In this study, lateral cephalometry is done for fifteen males and fifteen females aged from 18-40 years. Cephalograms are traced manually; then vertical, horizontal, and angular measurements are taken. Results are analyzed then rhinoplasty done for all cases and followed up for six months when cephalometric analysis done again.

Preoperative and postoperative results were compared and changes tabled and statistically calculated.

Comparison between preoperative and postoperative cephalometric measurements shows significant Upper Nasal Height (UNH) decrease and Lower Nasal Height (LNH) increase, Male Tip projection (TP) significant increase, Significant increase in Naso-Frontal angle (\angleNF), Significant decrease in columellar rotation angle (\angleCR) and significant decrease of Bony Nasal angle (\angleBN). Cephalometric analysis together with other tools as Photographic nasal study for assessment of rhinoplasty give us rational aesthetic data that improve both ethnic groups satisfaction after rhinoplasty and standard numerical data for optimum aesthetic rhinoplasty outcome for each ethnic group.

Key words: Cephalometric in rhinoplasty in Arabs, Value of Cephalometric in rhinoplasty.

Introduction

When approaching ethnic rhinoplasty patients, determining the preoperative goals and confirming the patient's expectations is of paramount importance. The goals of ethnic rhinoplasty should therefore address the patient's desire for preservation or alteration of ethnicity, balance of surrounding features, and adherence to patient desires¹.

Middle Eastern patients make up a large proportion of rhinoplasties performed throughout the world. However, one explanation for the dramatic numbers seen in Middle East countries, may be that the face is often the only visible part of the body in everyday public life. Middle Eastern nasal characteristics present on a gradient between the African-American nose and the Caucasian nose². Standardized, high-quality, preoperative photographs of the nose are critical for preoperative rhinoplasty planning, comparative postoperative assessment, and demonstration of surgical results³.

The increasing awareness of rhinoplasty as a cosmetic surgery and the increasing number of patients seeking rhinoplasty motivated us to do this study with an aim to compare the statistical data for cephalometric measurements of nasal aesthetics of Arab males and females before and after rhinoplasty.

We recommend to divide Middle Eastern population seeking for rhinoplasty into Middle Eastern proper (Arab) and (non-Arab) as cross cultural, and cross ethnic criteria are close. So that the desired shape

of nose nearly identical in various Arab people as we notice during this study.

Aim of work

The aim of this study to evaluate the statistical data of cephalometric measurements of Arab males and females nasal aesthetics before and after rhinoplasty.

Patients and methods

This study was carried out at Plastic Surgery Department of Mansoura University and Elite Hospital in kingdom of Saudi Arabia, from January 2013 to February 2015. We conducted it over 30 patients, 15 males and 15 females with 40 years as a maximum age, 18 years as minimum age. All the cases underwent primary rhinoplasty. Male and female in different groups as the anthropometric measurements differ, Excluding from this study, congenital anomalies affecting head and neck, patients unfit for surgery, patients with prolonged edema or induration post-rhinoplasty more than one year, Each case in this study underwent; full history including history of trauma, rhinitis, sinusitis, epistaxis, airway condition and headache related to sinuses, nasal examination including skin thickness, septal deviation, scar of previous surgery, nasal deviation, dorsal hump, and turbinate

