بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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Success and complication rates of different techniques and materials used for nasal dorsal augmentation in rhinoplasty

A Systematic Review, Meta-Analysis

Submitted for Partial Fulfillment of Master Degree in Otorhinolaryngology

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إن الله جميل
يحب الجمال

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Eman Soliman Fatallah

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List of Abbreviations

AC	:	Alar fold
AL	:	Alar lobule
ATC	:	Autologous tissue glue
CC	:	Costal cartilage
CT	:	Computed Tomography
DC	:	Diced cartilage
ePTFE	:	Expanded polytetrafluoroethylene
FB	:	Foreign body
FDA	:	Food drug administration
IAW	:	Inter-Alar Width
IHCC	:	Irradiated Homologous Costal Cartilage
INV	:	Internal nasal valve
LFH	:	Lower Facial Height
MA	:	Meta analysis
MFH	:	Middle Facial Height
N	:	Nasion
NFA	:	Nasofrontal Angle
NL	:	Nasal Length
NLA	:	Nasolabial Angle
NMA	:	Nasomental Angle
PCS	:	Preoperative Computer Simulation
PPP	:	Plasma poor protein
PRP	:	Platelet rich protein
PRN	:	Pronasale
SMR	:	Sub mucosal resection
SN	:	Subnasale
SRP	:	Septorhinoplasty
TA	:	Tip Angle
TDA	:	Tip Deviation Angle
TP	:	Tip Projection
UDC	:	Unwrapped diced cartilage
UFH	:	Upper Facial Height
ULC	:	Upper lateral cartilage

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ABSTRACT:

Background: Autologous materials, homograft and alloplastic implants are commonly used in nasal dorsal augmentation. So far, there is no satisfactory evidence to ascertain the safest, efficient, and superior in aesthetic outcomes among different materials. Thus, we aimed to conduct a systematic review and meta-analysis (SR, MA) of published literature to review rates of outcomes and complications of different materials used for nasal dorsal augmentation, in trial for better future surgical results.

Methods: Thirteen electronic databases were searched from inception through December 2018 and a manual search in October 2019.

Results: A total of 280 eligible studies were included, of which 165 articles were included in the meta-analysis. Compared to others, alloplastic expanded polytetrafluoroethylene (alloplastic e-PTFE) was considered first place, for having the highest graft scores in most of its outcomes; secondary deformity, resorption, patients' satisfaction, displacement, extrusion, seroma, graft deviation, swelling, and hematoma outcomes with rates of (2%, 0.6%, 96.5%, 1.3%, 1.2%, 1%, 1%, 0.8%, 0.8%)respectively. Alloplastic silicone came after e-PTFE, for its superior results in revision rhinoplasty, success rate, aesthetic function, and scarring outcomes (4.1%, 99.9%, 98.8%, 2.7%) respectively. Autologous bone graft came at the last place as it had the least graft scores in patients' satisfaction, displacement, perforation, and hematoma outcomes (50.7%, 9.3%, 8.3%, 5.4%)respectively. Autologous diced cartilage was superior in those outcomes; edema, bruising, and donor site complications (7.1%, 7.4%, 4.4%) respectively. Autologous costal cartilage had the highest graft scores in necrosis and graft exposure outcomes (4.3% and 1.9%), while it had the lowest graft scores in warping and success rate (7.1% and 87.3%). Autologous auricular cartilage had the highest graft scores in warping and foreign body reaction outcomes (1.4% and 6.3%), while it had the lowest graft scores in nasal obstruction and donor site complications rate (72.7% and 33.3%). Infection was the most common reported complication in MA, where autologous alar cartilage had the lowest infection rate of 0.2%, unlike alloplastic Medpor recorded the highest risk of 6.6%.

Conclusions: Regarding our results, we concluded that alloplastic e-PTFE yielded superior position in comparison to other materials, that would succeed as an alternative to convential autologous grafts, as had superior results in most of nasal dorsal augmentation outcomes. On the other hand, autologous bone graft was in the last place in all its outcomes. Future studies are needed to improve reporting of races variety, follow-up times, and diverse participants, as to resolve uncertainty regarding the ideal material for dorsal augmentation in rhinoplasty, with concentrating on proper assessment of races variety, which will improve selecting the proper graft implant.

Keywords: Augmentation, rhinoplasty, complication, nasal dorsum, meta-analysis, systematic review.

Introduction

The nose plays a significant role in facial beauty and self esteem. It is also a prominent structure of the face with projection making it unusually vulnerable to trauma and deformity in road traffic accidents and modern sports like boxing and karate. Aggressive nasal surgeries like sub mucosal resection (SMR) for nasal obstruction, untreated septal pathologies like septal hematoma, abscess and chronic granulomatous diseases are further sources of insult to nose. In all these cases, ignoring the problem from the onset or delayed consultation may lead to structural deformities of the nose**(Ali et al., 2018).**

Rhinoplasty is a plastic surgery that aims to ultimately, change the shape of the nose either for repairing a functional defect or cosmetically claim **(Jang and Yu, 2010).** The scientific reports consider rhinoplasty as one of the most challenging and rewarding operations in plastic surgery **(Tasman, 2017**). This outpatient surgery can be a mere reduction in the nose's hump or augmentation through architectural complex art **(Rohrich et al., 2002).** Besides, consuming over one billion dollars in 2016 just in the united states, the nose job ranked the third most frequent cosmetic surgery. In Asia, the need for rhinoplasty is augmented since Asians are notorious for their lowered dorsal height; which resulted in granting the rhinoplasty high importance **(Wang et al., 2009).**

For the surgery, it depends on implementing the proper techniques to increase the volume of the dorsal by adding specific materials **(Park et al., 2009)**. To insert ample volume to the nose, surgery schools had swarms of techniques in the usage of grafts