Cosmetology Conference 2019: Surgical adverse events and incidence rate in bidirectional barb suspension thread surgery

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Abstract

Introduction:
Among the methods of surgery for reshaping and redrawing the contour of our ageing face, currently one may go for su-
ture thread materials or other energy-based devices or formal
face-lifting surgery. There has been a trend and constant
upsurge in the application of thread suspension surgery all
over the world. The evolution of barbed suture technologies
and their application in the field of plastic surgery has been
already here for about three decades. According to surveys
Face-lifting comes in the 4th position for most common surgi-
cal procedures worldwide. Barb suspension thread can be an
alternative option to formal surgery as thread surgery is mini-
mal invasive, office-based procedure, bearing lower risks and
less down time. Successful thread usage has been started
since 1950s and is widespread later with the introduction of
permanent thread system by Sulamanidze in late 90s. De-
signs that were primarily developed and later enhanced for
use in aesthetic facial procedures include free-floating, bidire-
tional barbed sutures; unidirectional barbed sutures; an-
chored, bidirectional double-threaded sutures. To summarize,
the major thread system in the market currently are barb and
smooth suture materials. Further in the barb suture there are
two methods, it can be either unidirectional and bidirectional
barb system. Theoretically, bidirectional barb thread system is
more advantageous at it provides better mechanical ad-
vantage by positioning more barb in the suspension and the
antagonistic traction between the barbs in two opposite direc-
tions. However, the long-term results after the resolution of
the physical thread materials is done also rely on the effective
bio-stimulation.

Barb suspension surgery is getting popular as a
supplementary choice for facial contouring and reshaping.
Compared with formal face lifting, barb suspension provides a
safer, minimally invasive and office-based surgical procedure.
However, barb suspension surgery does have certain risks
due to the invasive nature.

Objective: We would like to evaluate the incidence of adverse
events after thread suspension surgery. Through this retro-
spective analysis, we would like to standardize the possible
adverse events to facilitate future reporting and prevention
strategies.

Methods:
To evaluate the bard methodology we have used Happy
LiftTM (Revitalizing) Double Needle threads (or in Europe and
some other countries known as DefiniSseTM threads). The
one used is a range of absorbable, monofilament, suspen-
sion-barbed threads of synthetic origin (poly-L-lactic acid
and caprolactone, p(LA-CL). The thread ends have two straight
sharp needles 100 mm long with a diameter of 0.462-0.488
mm for the thread with the 12 cm barbed section. The thread
with the 23 cm barbed section has two 150 mm long needle
with the same diameter. The barbs distribution is bidirec-
tional and convergent. The sutures interact with the tissues with a
double action.

Procedure:
The field of procedure includes midface, lower face and
neck areas. This procedure should be performed under local
anaesthesia with adrenaline using standard aseptic technique
in all cases. Depending on the vector for reshaping, the surgi-
cal procedures are standardized into five categories for differ-
ent approaches of facial reshaping as follows:

- Techniques with lateral vectors
  - Jawline Reshaping (JR) (18%);
  - Malar Reshaping (MR) (37%);
  - Lateral Reshaping (LR) (13%);
- Techniques with vertical vectors:
  - Oval Reshaping - Vertical Reshaping (ORV) (18%);
  - Oval Vertical Reshaping-H (OR H) (14%)

Post-operative care:
Patients were discharged with standard dressing materials
including chlorhexidine, fusidic acid or equivalent ointment
and paracetamol after the procedure. The patients were fol-
lowed up one week, two weeks and four weeks after surgery.

Results: The incidence of adverse event rate in the first
week is 13.5%. It drops in the first 4 weeks, 9.6% at week
2, and 5.5% at week 4. The reported adverse events which
persist after 4 weeks (number in brackets) include head-
ache(0), redness(0), swelling and bruising(0), persistent
surgical site pain(0), surgical site infection(1), asym-
metry(0), palpability of threads(0), early recurrence(0), pro-
trusion and extrusion(0), injury of the local anatomical parts
like parotid gland(1), post-inflammatory hyper pigmen-
tation(0), bunching, pleating and dimpling(5). Both patient fac-
tor, operator factor, material and surgical field can contrib-
ute to the incidence. Barb suspension thread surgery is a
relatively safe procedure. With careful selection of candidates, well-planned surgery, and respect to the sterility of surgical field and individual anatomical structures, majority of the incidents are avoidable. Clear post-operative care instruction and prompt intervention should issues arise are essential.

This is a single centre retrospective cohort study on the surgical outcomes. A collection of 200 pairs of thread were used in the period of 2017-2019 (two years). The patients were followed up one week, two weeks and four weeks after surgery. The adverse events are stratified according to defined categories. Photos were taken for documentation after patients’ consent.

The incidence of adverse events is sub sectored into 1. Mild (either improves with time, or manageable by simple, conservative and non-surgical intervention) and 2. Significant (needs active, aggressive or surgical intervention, one case of surgical site infection and one case of parotid gland injury). At Week 4, the incidence rate of adverse events is 5.5% (5.0% mild, 0.5% significant).

**Discussion:**
Office-based procedures have risen substantially every year. According to the American Society for Aesthetic Plastic Surgery (ASAPS), there was over approximately 5% increment each year. The art of aesthetic procedures, as well as from the expectations of the clienteles in this category require not only good aesthetic outcome, but also a tidy, swift and uneventful recovery. Overall, across all facilities, 1.9% of patients developed one major complications (2016). A 6-year retrospective review by Byrd et al demonstrated a complication rate of 0.73% [14], compared with 1.9% in another study by Gupta et al. [9]. Among these vascular complication like hematoma and infections were the major complication risks.

The surgeon places the thread using 5 standard approaches (see procedure). In this way the aesthetic outcomes are more predictable. Surgeons can have better surgical handling in the field by improvising the surgery of each individual based on the standard techniques. Apart from home care counseling, routine structured follow-ups are helpful as well (one week, two weeks and four weeks after the surgery). We believe this will facilitate reporting of any issues related to the recovery and early intervention if necessary.

**Conclusion:**
Barb suspension thread surgery is a generally safe procedure compared with most other aesthetic procedures. Patient factor, operator factor, material and surgical field can contribute to the incidence of adverse outcomes. With careful selection of candidates, well-planned procedure and respect to the sterility of surgical field and individual anatomical structures, majority of the incidents are avoidable. Clear post-operative care instruction and prompt intervention should issues arise are essential.

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