Calf implant story here

Aesthetic and reconstructive calf surgery is rewarding for patients but seldom performed. Dr Igor Niechajev discusses his techniques and innovations, including a calf implant inserter

Modern western lifestyles increasingly emphasise health, fitness and beauty. Liberal clothing fashions and less-fussy outdoor living habits expose more of the body than was acceptable only a few decades ago. Legs are now seen as an asset of personal beauty and the secondary gender characteristic of women and men.

Calves are a main focal point. Their main shape is determined by the development of the soleus and gastrocnemius muscles, the length and orientation of the crural bones and distribution of subcutaneous fat.

By measuring a large number of German women, Von Szalay determined an attractive range for the largest female calf circumference to be 33–36cm. A more thick or thinner female calf was considered to be aesthetically unattractive.

Correction

Correction of the calf contours is slowly gaining popularity, but outside Brazil, California and a few experts in Europe, it is a relatively little-known operation to most surgeons. Also, genu varus deformity could be optically improved by placing calf implants medially over the gastrocnemius muscle.

Liposuction

Liposuction on the calves is performed on two main indications: thick calves and cylindrically shaped calves without definition. Only vacuum liposuction (SAL) with either manually powered or mechanically reciprocating cannula should be employed. Ultrasound liposuction (UAL) is contraindicated because of the probability of skin burn. Most of the work is done in the subcutaneous plane, on both sides of the Achilles’ tendon and on the posterior surface of the gastrocnemius muscles.

Properties

Calf implants are made of either solid semi-soft silicone elastomer, which can be customised by carving, or they have a thick silicone shell filled with cohesive silicone gel. They are similar in consistency and profile to calf muscles.

Should the implant’s shell break, the cohesive silicone will not run out. Solid silicone implants have an advantage of possible adjustment on the operating table by carving.

I use them often in reconstructive surgery. A mould made of clay or plaster of Paris is sometimes made on the defect and serves as a guide for the factory in the production of the customised implant. Standard calf implants are available in symmetric, cigar-like shapes and have been joined in the past

References


A 22-year-old male athlete was able to enlarge all other muscles in his body by training, but not the calves. Before the operation (right), centre and five years following augmentation of medial calf contour with 220cc anatomical implants.
few years by asymmetric (ana-
tomic) forms, which are wider
and bulkier in the upper part.
Symmetric implants are suitable
in most cases and asymmetric
implants are sometimes used
by body builders or to fulfil
patients’ special desires. They
can, however, create disturbing
bulging in the individuals with
very thin legs.

Preoperative
Preoperative photographs and
drawings are made with the
patient standing on a podium.
Several parameters are meas-
ured on the calf, the largest
circumference being the most
important. Incision in the lower
tibial crease, future loca-
tion of the implant, and the
lower borders of gastrocnemius
muscles are marked. After the
standard preparation, the calf is
covered with the protective film
Op-Site (3M). Talc-free gloves
are used, which changed just
before the insertion of implants.

The choice of anaesthesia
is a personal preference. I pre-
fer spinal block because of the
mobility of patients during the
procedure. The skin, subcutis
and popliteal fascia are trans-
sected. The popliteal fascia ever-
goes distally into the deep
investing fascia of the crus. This
fascia, with its attachments to
the medial and lateral edge of
the tibial bone, is almost circular
and encases all muscle compart-
ments in the calf.

The dissection is done bluntly
using the Reynolds instrument
(Padgett) in the plane between
the investing fascia and the
gastrocnemius muscle on the
medial and, sometimes, on the
lateral side of the lower leg. One
or two implants are inserted
depending on the deficiency.

Inserter
One of the most cumbersome
sequences in calf augmentation
is always the insertion of the
implant and, in particular, reach-
ing the most distal part of the
pocket. My calf implant inserter,
in combination with lubrication
of implant and cavity with Xylo-
caine gel (AstraZeneca), allows
for the implant to be smoothly
introduced and the placing bet-
ter controlled.

Wound closure is completed
in layers, using a 3.0 Vicryl run-
ning suture for the fascia and
subcutaneous fat because of its
softness. For the skin I use 3.0
unifilament slowly resorbable
Monocryl (Ethicon). I perform
totally buried intracutaneous
running in the mid-dermis level
suture. There are no stitches left
on the wound surface requiring
removal. Surgical glue (Nobecu-
tan) and the transparent poly-
yethylene film OpSite (Smith &
Nephew) further enforce the
closure.

Sometimes calf augmenta-
tion is combined with semi-cir-
cumferential liposuction above
the ankles. Patients stay in bed
for 12 hours with their legs ele-
vated. They are released the next
day to go home with crutches.

Innovations
Innovations in the field of breast
surgery have been applied for
augmentation and reconstruc-
tion of the calves. These are the
OpSite barrier for preventing
contact between the implant
and the skin, which eliminates
the need for antibiotic cover,
and liposuction, which can be
used for creating aesthetically
pleasing calves.

The latest innovation I have
added is augmentation of the
anterior tibo-fibular compart-
ment of the calf. In a patient
with post-traumatic, neurogenic
muscular hypoplasia of the
right calf, I performed recon-
struction in three stages. After
restoring the bulk of the superfi-
cial posterior compartment and
liposuction of the left healthy
calf, I performed the recon-
struction.
the anterior tibio-fibular compartment was restored. With the guidance of a mould, a custom-made, semi-solid 92cc implant was placed under the investing fascia—resituating the lost bulk of the tibialis anterior and extensor digitorum longus muscles.

My latest innovation is the flushing of the subfascial pocket with long-acting local anaesthetic ropivacaine just before the insertion of implants. I use Narop (AstraZeneca), or Chirocaine (Abbott) in 10mg/ml, diluted with normal saline 1:4, and use 25ml per site. An epidural catheter is introduced into the implant cavity, along with a Microvac drain. Additional increments, 10cc per leg, of the diluted Narop solution are given every three to six hours during the patient’s stay in the clinic. Ropivacaine shield decreased required amount of analgesic medication.??

My conclusions are based on more than 30 calf operations performed on 28 patients from 1991–2004. Patients operated with liposuction in this region had prolonged recovery, but the long-term results were good. Calf augmentation, or reconstruction with silicone implants filled with cohesive gel, has evolved to be effective, safe and aesthetically pleasing with few side-effects.

Patients generally felt better after their aesthetic improvement. Proper implant selection and positioning produced a natural appearance of the augmented, restored calves.

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