

ACQUIRED LEG ATROPHY

COMPUTER-ASSISTED CORRECTION WITH CUSTOM-MADE SILICONE IMPLANT

DEFINITION

Atrophy of the calf corresponds to a lower volume of the leg (unilateral or bilateral), and concerns

- mainly the muscle groups of the posterior part (gastrocnemius),
- incidentally on the knee, leg and ankle bones.

SOURCE

The source of this atrophy can be

- innate or constitutional: plastic surgery.

This is a bilateral, symmetrical plastic disorder, the surgery is usually not covered by health insurance.

- acquired: reconstructive surgery.

After a disease or a surgery: poliomyelitis, clubfoot, amyotrophic lateral sclerosis, lupus, meningocele, foot surgery. There is a deformity, which is often unilateral, and an asymmetry compared to the other limb.

OBJECTIVES AND PRINCIPLES

The lack of lower volume of the leg is partly due to that of the internal and/or external gastrocnemius, and partly to that of the skeleton and joints.

The functional consequences are generally moderate or due to restricted physical activities induced by poor body image.

The objective of this correction is purely morphological. This deformity is often poorly accepted physically and psychologically by the patient, reflected by a modified self-confidence and by a malaise, which can be sometimes deep, leading to a true complex.

Psychological consequences are often important from adolescence onwards, disturbing self-image, social relationships, and sometimes indirectly sporting activities.

The surgical volume increase of these muscles is possible thanks to the filling technique with implants and a selection of:

- silicone gel implants, like for breast implants
- custom-made (computer-assisted) silicone elastomer (rubber) implants, more suitable.



The custom-made implants currently used consist of a medical-grade silicone rubber or elastomer: there is no envelope or filling product. There is no risk to wear off or rupture. A fibrous exclusion coating (capsule) develops quickly, just like around any other foreign body (steel, glass, nylon...); but there never is a rejection response by producing antibodies. This envelope cannot retract onto this incompressible implant: there is never any "adhesion" (adhesive capsulitis). There is no risk to rupture, even after a long time: they are definitive and implanted for life.

It is also possible to use (exclusively or as a complement) fat tissue transplantation or lipofilling. The lipofilling technique is adapted for discreet forms, but is not enough for more pronounced forms.

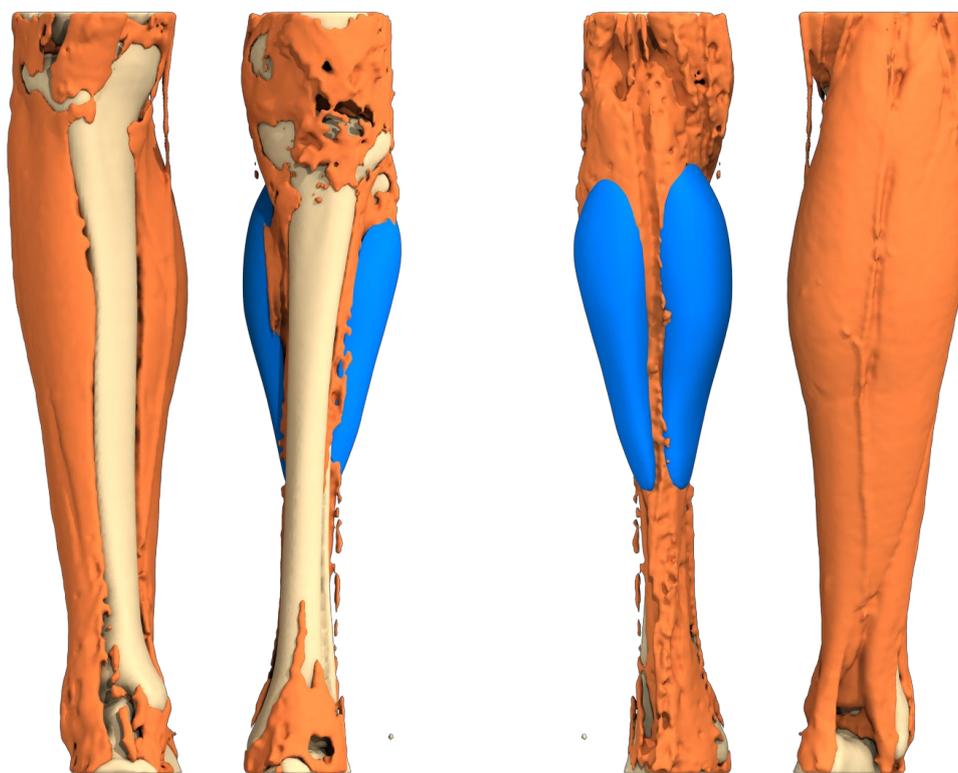
It is mandatory to wait the end of development to perform the intervention, i.e. 16 years old when the hormonal impregnation and the deformity are stable.

BEFORE THE SURGERY

Patients can be informed of the different existing techniques during a surgical consultation with clinical examination. This consultation can be associated to a 3D scan of both legs in supine position with a support under the heels, and will be used for the computer-assisted reconstruction to design the custom-made silicone rubber implants. Pictures are taken from the front and the back.

A common preoperative evaluation is performed according to prescriptions. The anaesthetist will be seen in consultation no later than 48 hours prior the surgery.

No drug containing aspirin shall be taken over the 10 days prior the surgery. It is necessary to be fasting (no eating or drinking) 6 hours before the surgery.

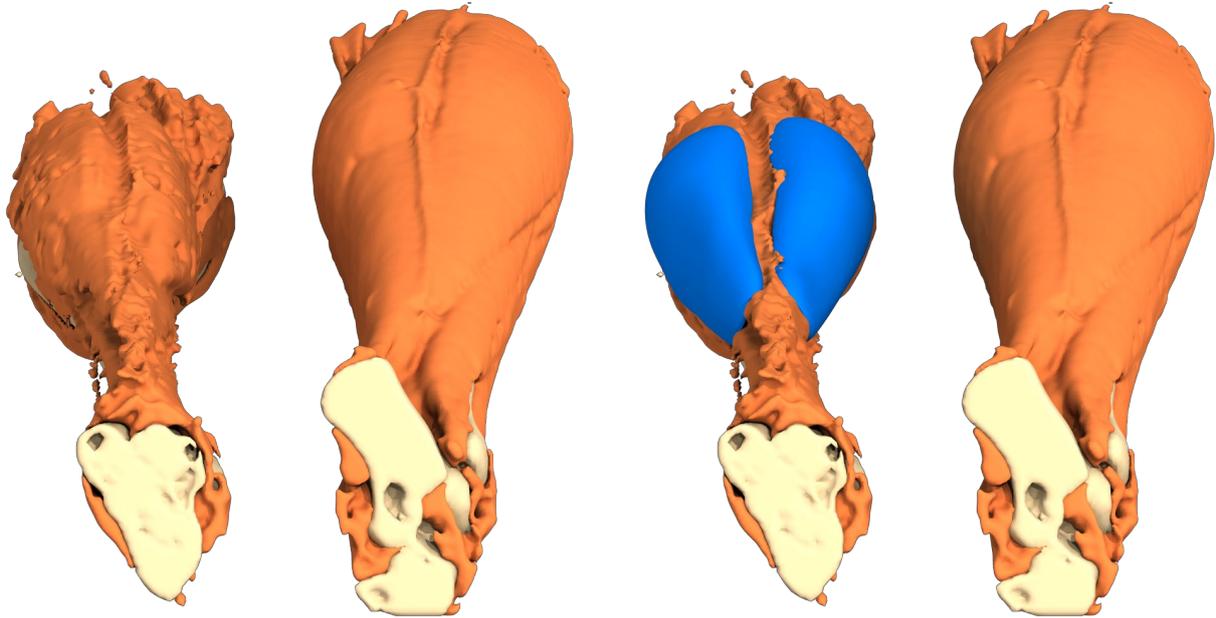


Computer-aided design

TYPE OF ANAESTHESIA AND TERMS OF HOSPITALISATION

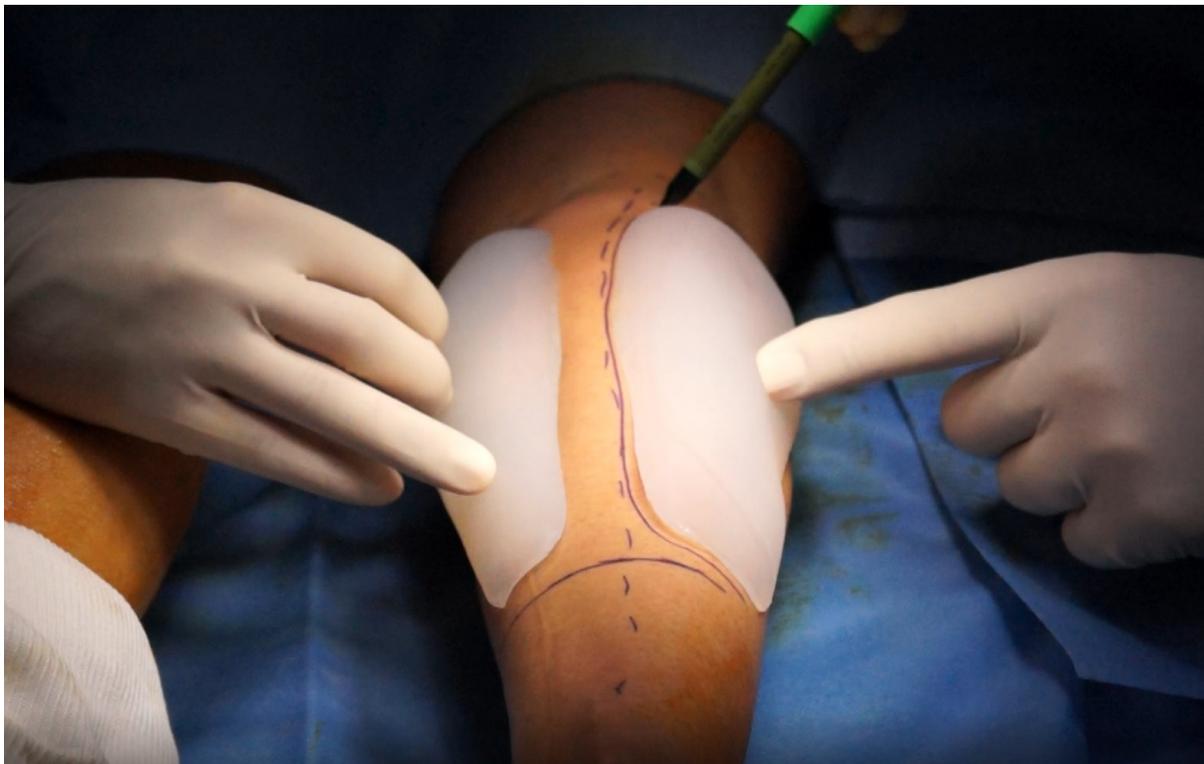
The intervention is performed under complete general anaesthesia with intubation in prone position, arms at sides.

It requires a 3 days' hospitalisation: admission the day before the intervention and discharge the next day or the day after.



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THE SURGERY



Medical-grade silicone elastomer sterile implant

- Standard silicone gel implant, it is the basic technique invented and adjusted by Julien Glicenstein, M.D., in 1975.
- CAD custom-made silicone rubber implant: it is a new technique invented more recently by Professor Jean-Pierre CHAVOIN.

The edges of the locus are drawn on the skin using the previous identification (computerized in case of custom-made silicone rubber implants).

In both cases, the implant(s) are introduced using a horizontal popliteal approach (behind the knee) of 6 to 8 cm depending on the number of implants. The prosthetic locus is placed behind the muscle aponeurosis of one or both gastrocnemius. The detachment is performed on an avascular plane. It is facilitated using a long detachment device and the firmer consistency of rubber implants.

The intermuscular wall is respected to preserve the precious saphenous vasculonervous axis and its perforators intended for skin.

The closing is performed on two levels using absorbable suture material. Drainage is not necessary. The circular contention is moderate with Dacron felt strips and Surgifix.

AFTER THE SURGERY: POSTOPERATIVE OUTCOMES

Postoperative pain is most of the time short and controlled with grade 1 analgesics. Progressive standing up and walking are prescribed activities as soon as the next day to avoid the risk of thrombosis and related to anticoagulants. Compression stockings are not necessary.

There is no major sero-hematic or serous effusion. Punctures are not necessary.

Work stoppage lasts 15 days, and the recommendation to stop sports is for 3 months; beyond, any sport is possible with no risk or discomfort.

RESULT

If this technique brings a real improvement regarding the volume, it cannot offer a perfect symmetry for atrophies of both the skeleton and the joints. The distal third of the leg, lacking muscle, is imperfectly corrected by the implant and might justify, subsequently, an additional transplant of fat tissues.





POSSIBLE COMPLICATIONS

A skin necrosis may occur if the technique is not respected, if the implant is too big, or if the detachment is performed subcutaneously instead of on the retroaponeurotic level.

CONCLUSIONS

Calf implants can offer a comfortable volume, custom-made rubber implants are more accurate and do not present any risk of rupture or distorsion, even on the long term.

PERSONAL NOTES



3D custom-made implants