Protocols

for the different manufacture stages

of femoral prosthesis

with :

- ischial containment socket
- 6Y81 Liner
- Proseal ring
- Oneway valve

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Stages of the manufacture for femoral prosthesis

1. **Patient welcome** : analysis of the stump, choosing the type of socket

2. **Taking the moulding , creation of a file to follow the patient**

⇒ Taking measurements (circumferences and levels) not forgetting to look for the end of the femur (in this method gaps or diameters are not essential

⇒ Protection of the patient before moulding with fitted jerseys

⇒ Casting according to protocol

3. **Rectification of the positive according to protocol**

4. **Trying the device on**

⇒ shape, volume, cutouts

- ✓ Validation of the shape and volume of the socket before the patient starts to walk
  - The patient has to fit perfectly into the volume of the socket
  - The patient has to be able to sit down without driving away the socket

⇒ Adjustment of alignments according to protocols

- ✓ While stationary
- ✓ While moving

Taking the cast

1. Tight-fitting Jersey

· One of 7 cm on the stump, split on the side
· One of 15-cm acting as shorts with a hole of about 20 cm in diameter to pass the stump through

2. The shorts are stretched by a strap placed on the opposite shoulder to the stump, fixed behind, at the parting of the buttocks and at the perineal level

The hole made in the jersey of 15 cm must be such that the buttock rests over the hole, the skin should not be visible on the patient, at any point.

3. Control of the bone areas:
· ischium + branch
· trochanter
· end of the femur

4. Validation of the position of the hands

The taking of the molding is done in two steps:

1. Casting the cylindrical and the lower parts of the stump through stretching of the bands to the edge of the extrusion

Orientating the lower part of the stump backwards and outwards.

2. Use a 4-layer plaster splint of 20 cm, prepared before.

Place the plaster splint to make the collar of the socket as follows

⇒ The plaster splint must cover the commissure of the thumb with 1/3 of the milk in front and 2/3 behind
⇒ Seek out the ischium with the hand covered with splint, position it well, and surround the stump with the spint with the help of the other. The plaster splint must cover well the lower part of the buttock 5 cm above the trochanter.

⇒ The hand supporting the ischium is oriented at 45 ° in the three planes, it looks forward, up and out. The ischium is housed in the hollow made by the index, medium and ring fingers, with regard to the first and second phalanges. The fifth metacarpal rests on the inner edge of the stump to achieve the necessary slope over the upper 3.5 cm of the inner edge.
⇒ The opposing hand to that which covers the ischium will identify the facet under the trochanter, orienting the femur in the frontal plane and marking the area under the trochanter with the fingertips.
⇒ Before pouring the positive, its triangularity must be checked and increased slightly where necessary.

Casting is finish.

Shaping of plaster

After molding on 6Y81 liner

1. Draping (same as for the first case):

Turn the negative and drape it parallel to the standard alignment of the stump, one must find the line of progression, of abduction and of flexion contracture possible.

2. Pouring with tube/with draping

3. Rectification:

If the cast was taken as described above,

We reduce:

- The area above trochanter to obtain an angle of about 15 ° to the axis of the femur.

- The proximal tightening is going to be mainly at the back of the stump, following the shape of the buttock (it can be reduced to the rear of the ischial tuberosity)

Reduction by about 2% at the collar, we will not touch the rest

Note: If the stump is fat and flabby, check the circumferences stump over the liner and reduce all along the stump to be closer to the measurements, with keeping only a 2% reduction at the collar.

Apply plaster over:

- The transition to the branch
- The adductors
- The area corresponding to the anterosuperior iliac spine
- The back of the ischial area

Trying the socket on

1. Before putting the socket on the patient, confirm the cutouts with the help of the form "Constants to respect "

2. Implementation of the socket on the patient:

It is considered that :

⇒ *Tightening should not be excessive if the measurements were observed during the correction of the positive.*
⇒ *The depth of the socket must be good if the casting was well taken and the measurement of length of the stub validated.*

For these reasons

If during the fitting of the socket the patient does not reach to the bottom, we only work on the collar of the socket
We will look for areas that are preventing the descent while respecting the constants included on the form...

⇒ We will never lower the perineal area more than a centimeter to respect the volume and the measures at the start.

⇒ We will ensure that nothing interferes with the sitting position. Patients are indeed very often seated.

⇒ If the socket yawns at point of the loaded trochanter , the origins may be at the level of the ischial area always refer to the table ...

⇒ If the patient rests on the ischiopubic branch, do not lower this area if the depth of the socket is good; better instead to enhance the ischial area.

⇒ All changes must be carried out in the same spirit, referring constantly to the form "Constants to respect" and while considering that we should not change things that have been rigorously manufactured.

Protocol of alignment

1. Validation of the alignment with the shoe (on workbench)

   ⇒ Height knee joint / ground
   ⇒ Height ramus /ground
   ⇒ Rotation foot/knee joint axis = 3°
   ⇒ Knee joint /socket = axis perpendicular to the line of the walk
   ⇒ Adduction socket 7°
   ⇒ No flexum
   ⇒ Front view : knee joint fixed in the middle of the top of the socket
   ⇒ Profile view: see the knee joint instructions.

2. On the patient :

   ⇒ Front view : stance phase = vertical pipe
   ⇒ Profil view: steps must be the same length, the patient should not camber during the rear step with the prosthesis.

To obtain these results :

⇒ Work just on the below socket adapters
⇒ Don ’t change the foot rotation in relation to knee joint axis
⇒ Before changing angulation of the socket, ensure that the socket doesn’t limit the rear step.