

Paper I: Upper Limb prosthetics and orthotics and Spinal orthotics

Alignment & Fabrication of Upper Extremity Prostheses

Introduction

- Generally, what is alignment?
- What does the alignment aim for?
- A partial hand amputation does not need a specific alignment as the wrist joint is still remained
- The alignment of a prosthesis of a trans-radial amputation is always the same?

Alignment of TR

1. A trans-radial amputee needs a cosmesis prosthesis. His stump's length is medium.

Discuss how to set up the alignment of the prosthesis.

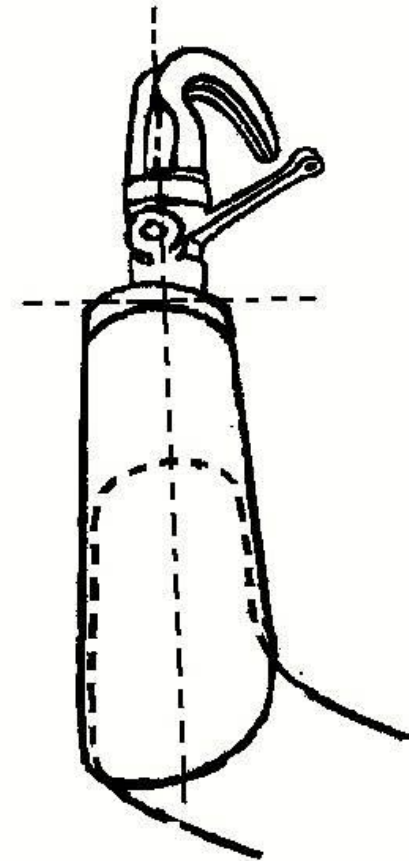
Alignment of TR

2. A trans-radial amputee needs an active terminal device. His stump's length is medium.

Discuss how to set up the alignment of the prosthesis.

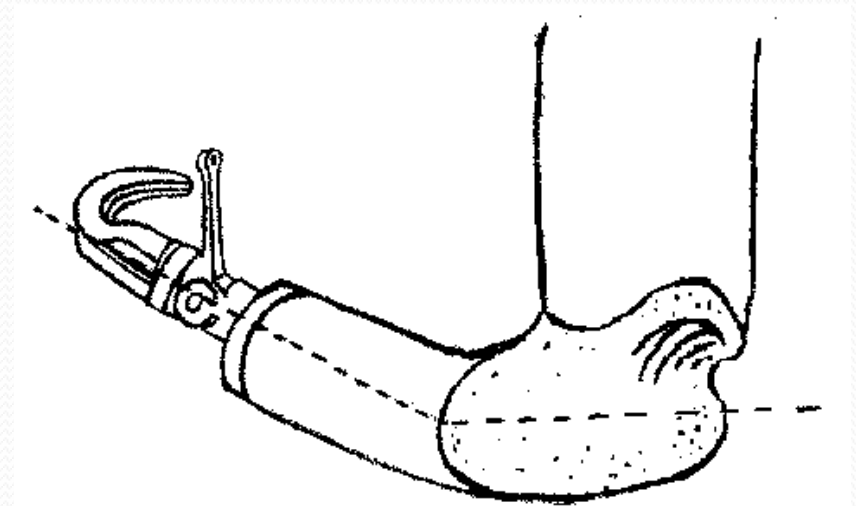
Wrist alignment

- The optimal positioning to allow the terminal device to reach the mouth
 - 5 degrees wrist flexion
 - 5 degree radial deviation



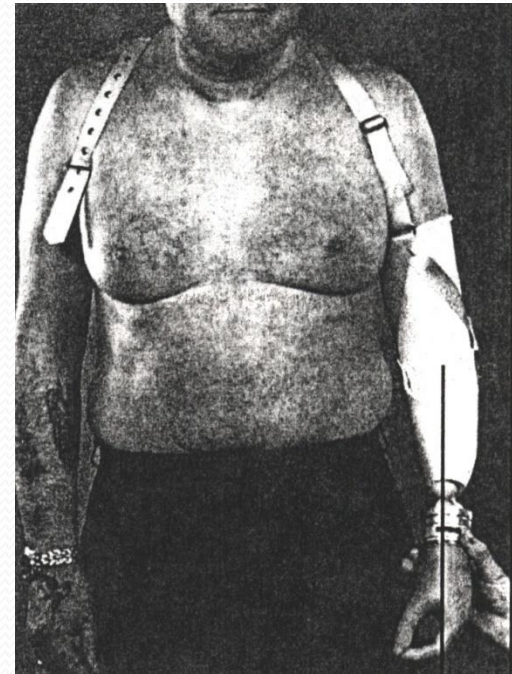
Pre-flexion

- What is pre-flexion?
 - Additional flexion added to along axis of the stump to create a forearm
- Pre-flexion is required when flexion of the elbow is limited



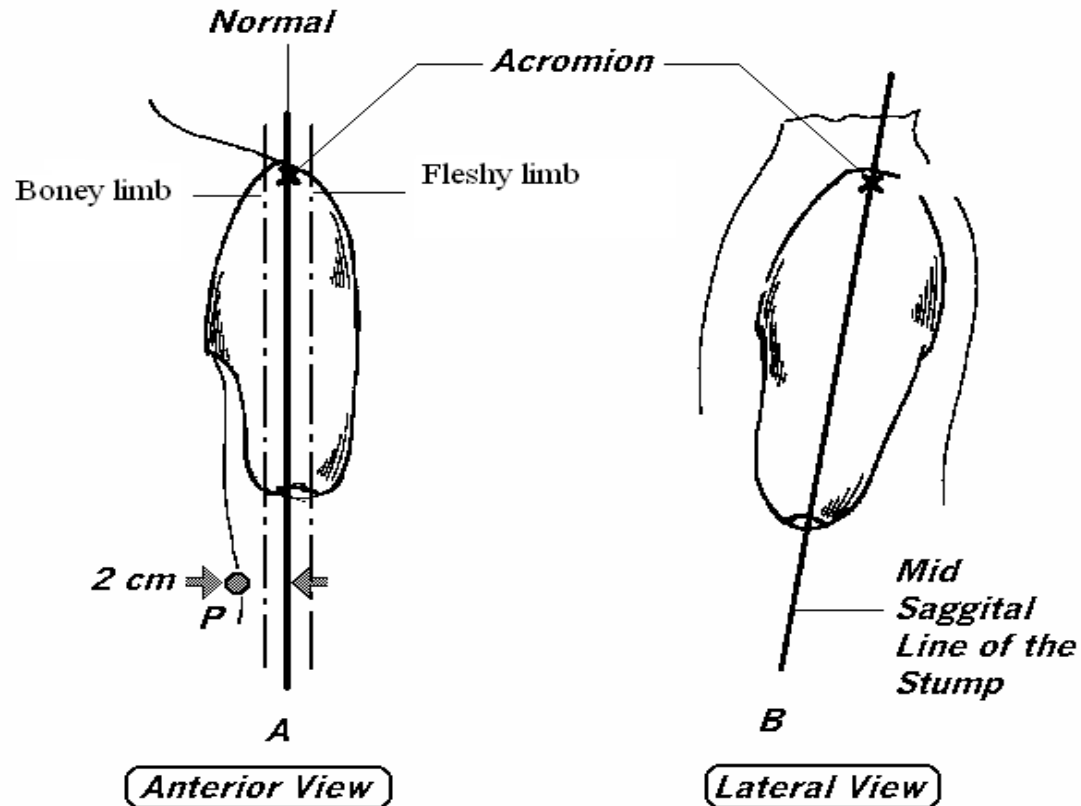
Set-up the alignment

- Alignment can be set during a negative cast fitting

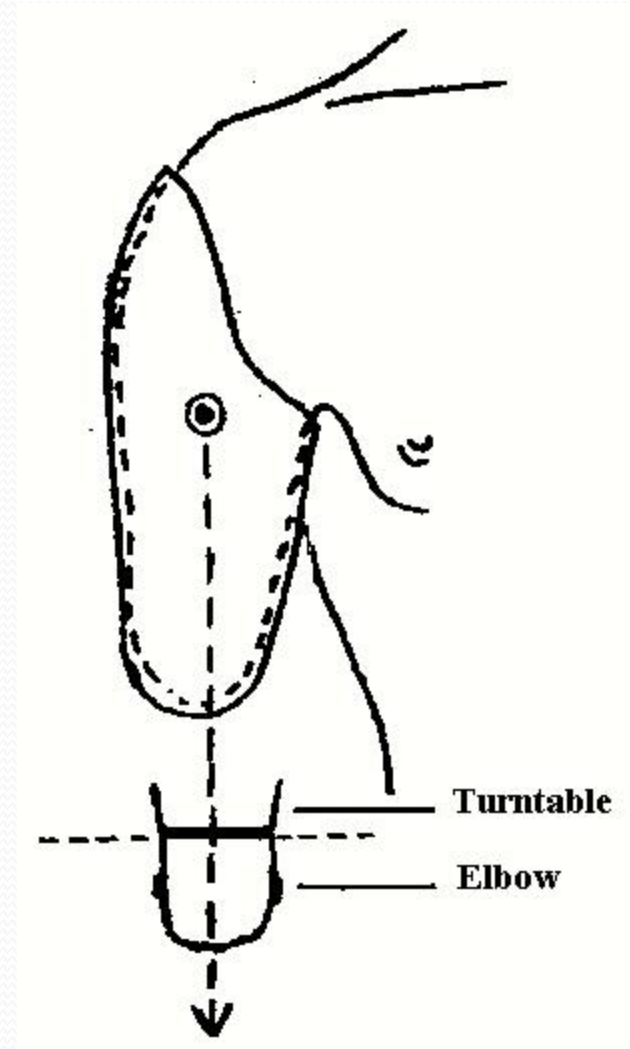
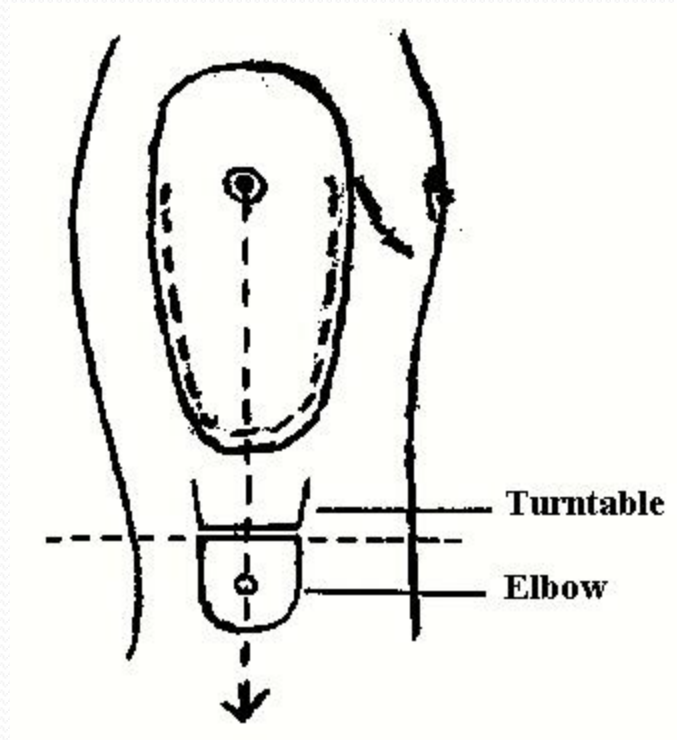


Alignment for TH

- Alignment lines originate from acromion



Determining position of elbow



Setting the forearm

1. When the fitting is finished, close all holes inside the socket by tape and set on the positive mold (Fig.1). Stand the film by following the longitudinal line on the socket to be long enough to match the length of forearm of sound side (Fig.2).



Fig.1 Seal the hold inside socket



Fig.2 Set the film on the 1st socket

2. Measure the length of forearm extension (Fig. 3) to fit the length of sound side (apex of medial epicondyle – tip of the thumb) – 1cm then cut it (Fig.4).



Fig.3 Measure the length of forearm



Fig.4 Cut the distal end of forearm extension

4-3. Wrist unit to be set according to the bench alignment below (Fig.5).

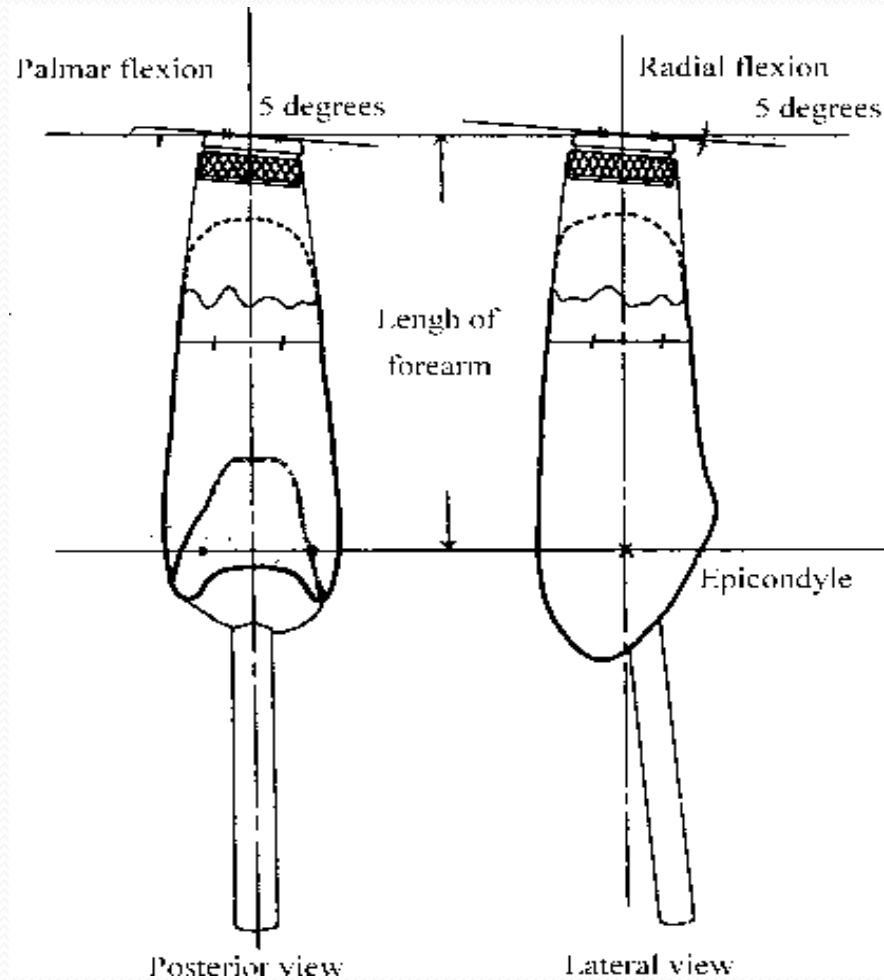
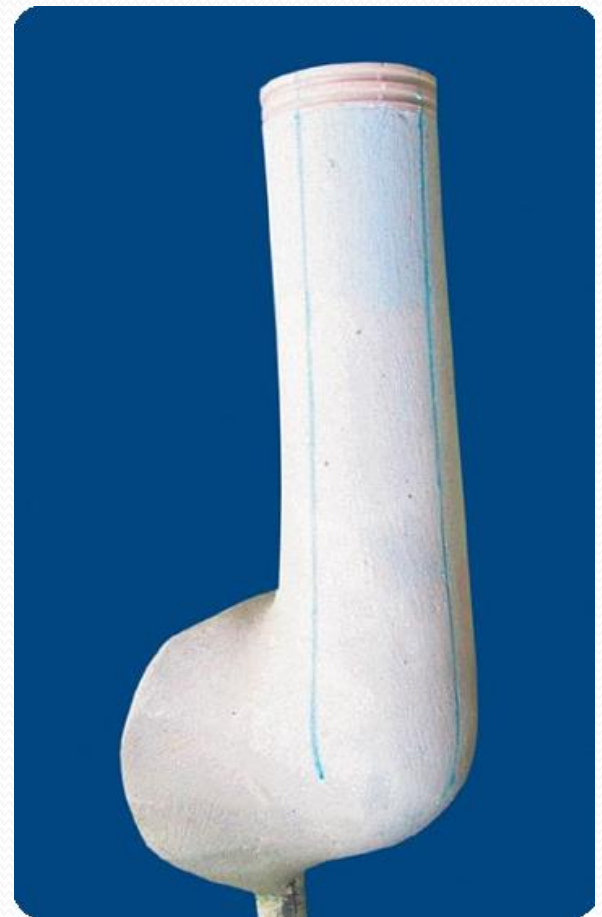


Fig.5 Bench alignment of trans-radial prosthesis



Questions?

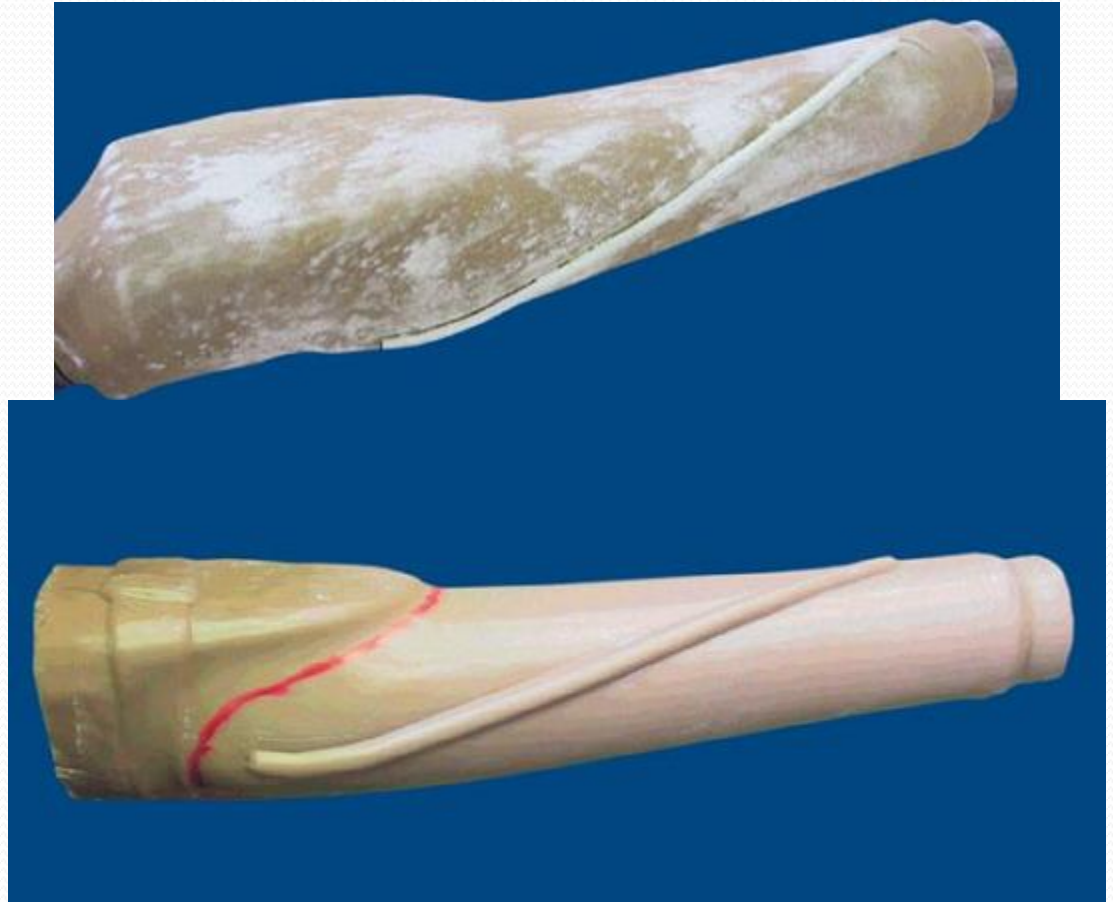
Fabrication

Upper Limb Prostheses

Fabrication of the first socket



Fabrication of the second socket



Fabrication of the second socket

