

Pectoralis major (PM) tendon as reference to restore humeral length in case of hemiarthroplasty for fracture : CT scan study

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Functional results following hemiarthroplasty for fracture are strongly correlated with bone healing of tuberosities and height of the implant. We analysed the distance between the top of the humeral head and the upper part of Pectoralis Major (PM) on 137 shoulder scans so as to carry out a wide ranging study on the measurements reported in anatomical studies.

200 consecutive shoulder CT scans of adult patients without post-traumatic lesions were analysed retrospectively (88 women & 112 men, mean age 49.79 years (18-93). All of the examinations were read by the same multiplane reconstruction technician on a PACS post treatment console. For each of the 200 scans (64 slice CT device, 140KeV, 350mAs, rotation time 1s, slice thickness 1mm, obtaining 64 slices/0.6, pitch 0.8) only 137 were able to show a definitive analysis of the sternal head of the pectoralis major.

Distance between the pectoralis major and the top of the head was 67.6 mm (SD: 9.988mm), between the pectoralis major and the trochiter 57.825 mm (SD: 10.317mm), between the pectoralis major and the change in curvature of the external edge of the humeral neck was 28.701mm (SD: 9.029mm) and the anatomical neck: 34.146mm (SD: 9.697mm).

There was a very significant difference in this distance due to gender: an average of 7.8mm more for the men ($p < 0.001$).

With the reported anatomical studies and this first CTscan analysis the right distance between humeral head and Pectoralis major can be defined as 6 cm but with differences depending on the gender