ARTHROSCOPIC ROTATOR CUFF REPAIR-EVALUATION UP TO FIVE YEARS

Purpose: The purpose of the study is the evaluation of the results of arthroscopic RC-Repair over a period of 5 years and additionally to compare the different method of repair types.

Methods: The study included fifty nine patients with mean age of 58 years, 24 males and 35 women, who underwent arthroscopic RC-Repair from August 2005 to June 2010. All the patients were evaluated with 3 different methods, The Simple Shoulder Test, the modified UCLA-Scale (5 points have been added for the motion in abduction and an additional 5 points for the muscle strength in abduction, so the maximum score is 45 instead of 35) and with Constant Score. The Evaluation took place pre-operatively, then at 3 months, at 6 months and at 1 year postoperatively and thereafter annually. The shape and the size of the tear in anteroposterior dimension, and the repair type were also evaluated. All the operations were performed by the same surgeon, and all the patients underwent the same rehabilitation protocol.

Results: The results of this study are in compliance with other publications and even better. 38 medium (1.0-2.9cm) including the 18 partial thickness, 16 large (3.0-4.9cm) and 5 massive tears were repaired. Regarding the shape of the tear, 49 crescent, 2 U-shaped, 4 L-shaped and 4 Reverse L- Shaped tears were repaired. The 18 partial tears were converted to full thickness tear and repaired. The repair included 36 simple repairs, 13 double row- suture bridges, 10 margin convergences(Side to side) and additional 7 repairs of Subscapularis , 9 Bicep's tenodesis and one Coracoplasty. 104 suture anchors and 27 push locks were used. The mean tear size was 2.4 cm per patient; the mean number of anchors was 1.7 anchors per patient and the mean number of anchors per 1 cm of tear was 0.7 anchor.

1. The **Simple shoulder Test** showed a great improvement after 3 months (from 3.4 mean points preoperatively to 8.3), after 6 months this value reached a high level (10.6 points) and after a year approached the physiologic value of 11.6 points. At the end of the 2nd year the value was 11.8, and 12 at the end of the 3rd year. This value continued at the same level at the end of the 4th and the 5th year. (See table 1)

2. The **Modified UCLA Scale** also showed the same improvement, i.e. after 3 months the preoperative mean value of 20.2 points rose to 35.5, after 6 months to 40.6 points, and after a year reached 42.8 points. At the end of the 2nd year this value reached 43.5 points, which belongs to excellent result group, and to 43.8 points and at the end of the 3rd year. The improvement continued further ,so 44.5 by the end of the 4th year and 44.7 by the end of the 5th year. (See Table 2.)

3. The same picture was also seen in **Constant Score**, where the preoperative mean score of 48.6 rose to 71 after 3 months, to 82.5 after 6 months and after one year reached 89,0 points. The improvement continued further and at the end of the 2nd year the mean score was 90.7 , at the end of the 3rd year 92.6 ,at the end of the 4th year 93.8 and 94.4 by the end of the 5th year. (See table 3.)

4. **Concerning pain,** according to Constant Score, where the score of 15 means no pain at all, the improvement was highly significant. An important improvement after 3 months was noted (from 3.5 to 11.4), with further improvement to 13.4 after 6 months, 13.9 at 1 year, and generally, nearly no pain at the end of the 2ed year (13.8), 3rd year (14.2), 4th year (14.6) and 5th year.(14.6). (See table 4A and 4B .)

5 The **Range of Shoulder motion**, evaluated by Constant Score, where 40 points is the maximum value, showed huge improvement too. The mean preoperative value of 21.9 points rose to 33.8 after 3 months, to 35.0 after 6 months and to 36.4 after a year. The value improved further to 36.9 by the end of the 2nd year, to 37.2 at the end of the 3rd year, to 37.8 at the 4th and to 38.3at the end of the 5th year. (See table5)

6. The **muscle strength** evaluated by the Constant Score, where the score of 25 is normal value, also showed great progress. The mean preoperative value of 12.8 points became 15.0 after 3 months, 19.3 after 6 months and 22.1 after a year. By the end of the 2nd year the value was 22.9, by the end of the 3rd year 23.5, by the 4th and 5th year at 24.3. (See table 6)

7. Generally speaking the **overall final results** evaluated by Modified UCLA Scale showed 42.3% excellent (43-45 points), 44.2% good (39-42 points) and 13.5% poor (less than 38points) after the first 6 months. These results improved after the 1st year with 63.6% excellent, 27.3% good and only 9% poor. The improvement continued further so by the end of the 2nd year, the excellent results were 78.9%, good 18.4% and 2.6% poor results obtained.. This tendency continued further, and by the end of the 4th year the excellent results were 92.8% and good 7.2%.and no poor results. All the initial poor results had been improved. (See table7)

8. Additionally a comparison of the several methods of treatment did not show any significant difference after one year. Although in the first 3 and 6 months the double row suture bridge technique showed better results than the other methods, the sample was too small to allow any valid conclusions. (See Graphic 1)

Complications: One patient developed a frozen shoulder after the operation; she refused further intervention and after one year with physiotherapy is dealing quite well. A further complication was a patient with known Rheumatoid Arthritis, upon whom a rotator cuff repair and AC-Joint resection performed. She was in pain for one year, and she underwent arthroscopic Re-Repair , which also failed. She is now quite happy after a new subacromial debridement. Another complication was a loosening of an anchor ,which has been removed.

Conclusion:

1. The present study confirms the results of previous studies concerning arthroscopic rotator cuff repair. The improvement of pain, range of motion and muscle strength was quite high after 6 months; this improved within a year and continued to improve further in the following years.
2. The double row suture bridge technique may show better results in the early postoperative period, but this remains to be confirmed.

3. Empirically, the improvement of muscle strength is more predictable in younger patients than in older, while the pain improvement is not age- related. This statement in not yet evidence- based due to the small number of patient, and needs to be confirmed.
4. The Arthroscopic Rotator cuff repair has a very low complication rate (5,0%)

Table 1

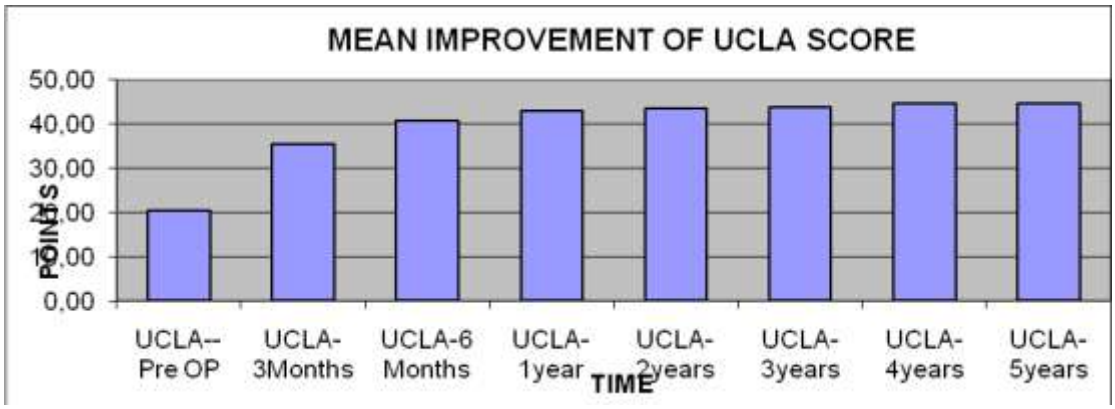


Table 2

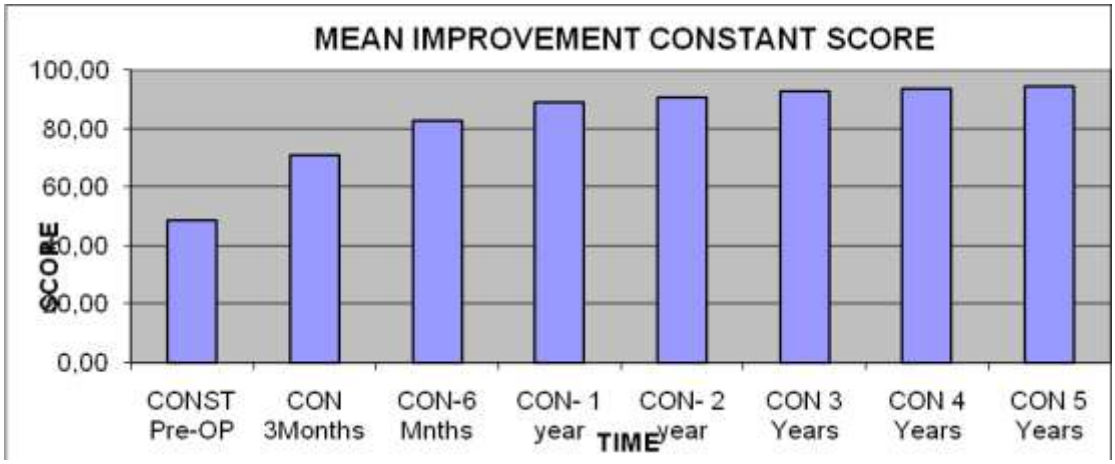


Table 3

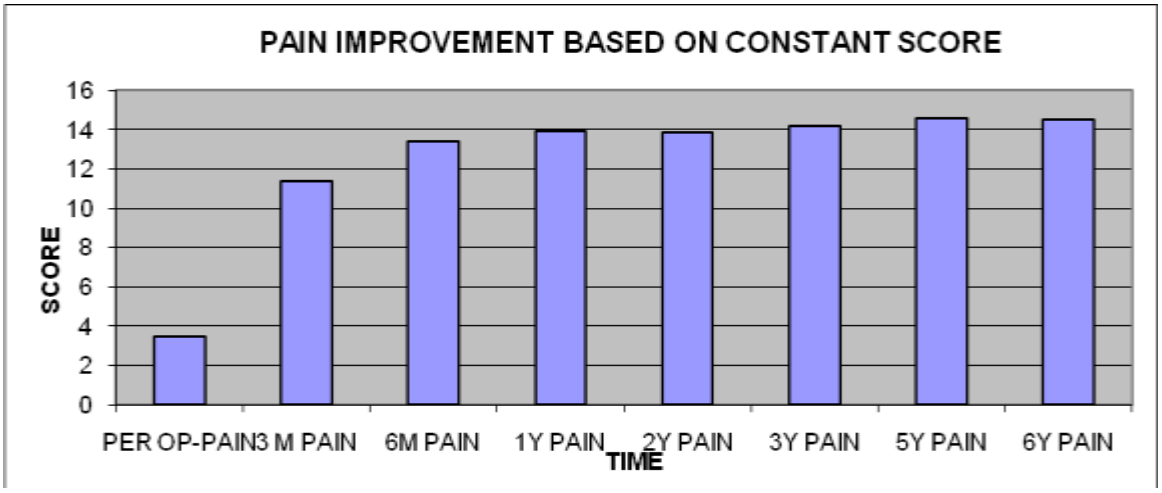


Table4A

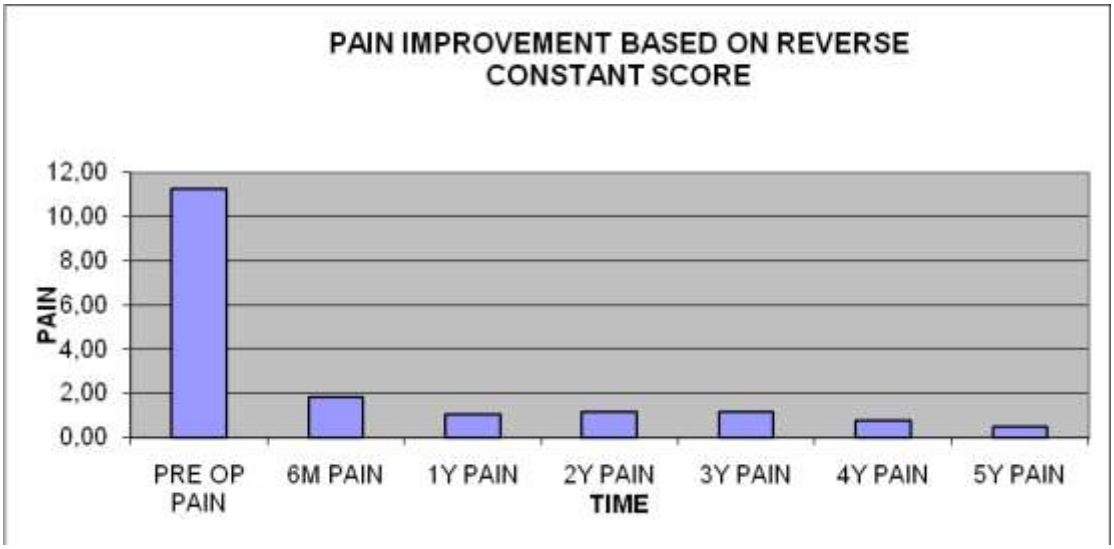


Table 4B

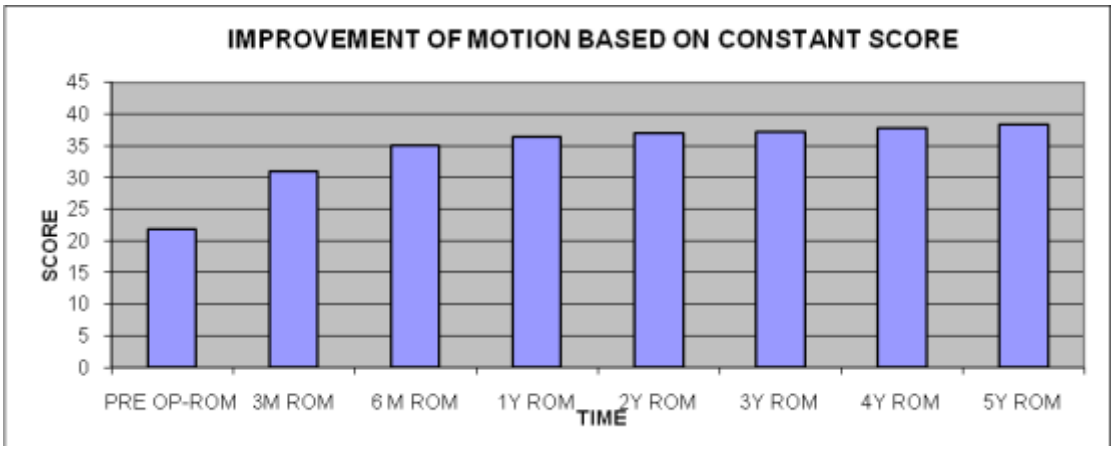


Table 5

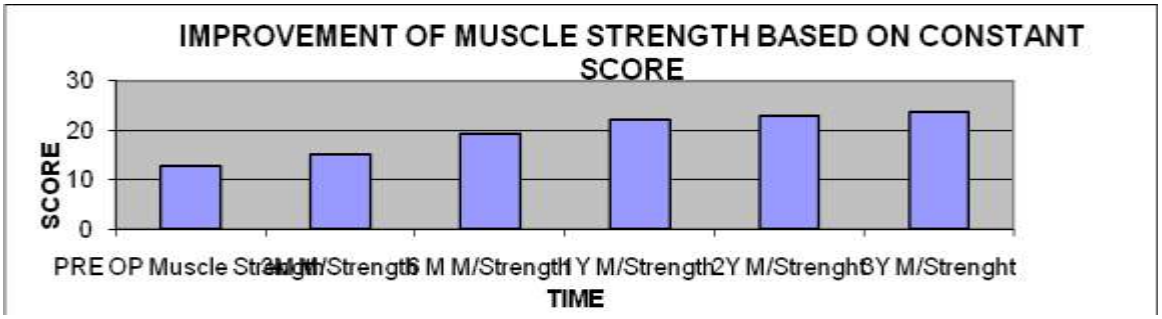


Table 6

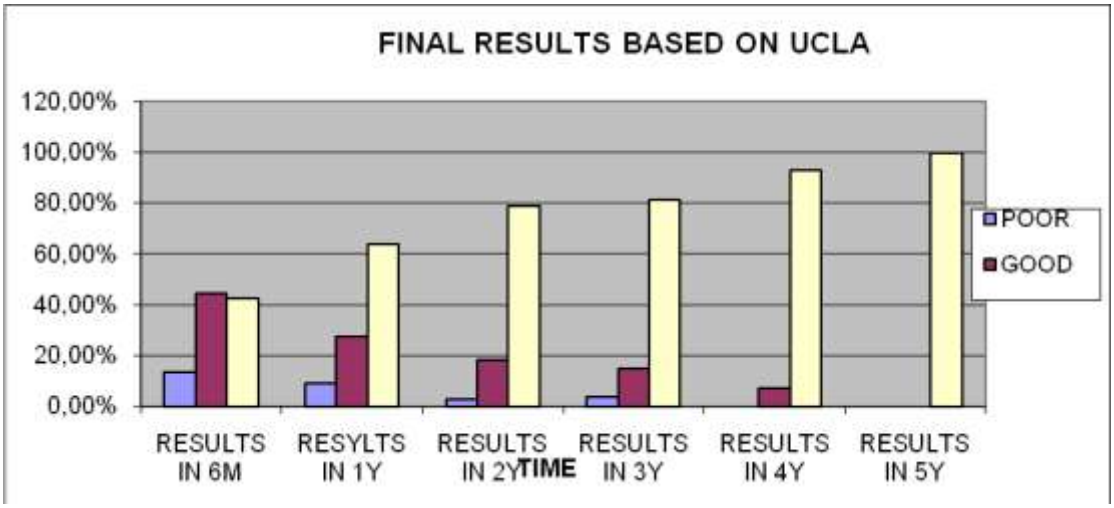
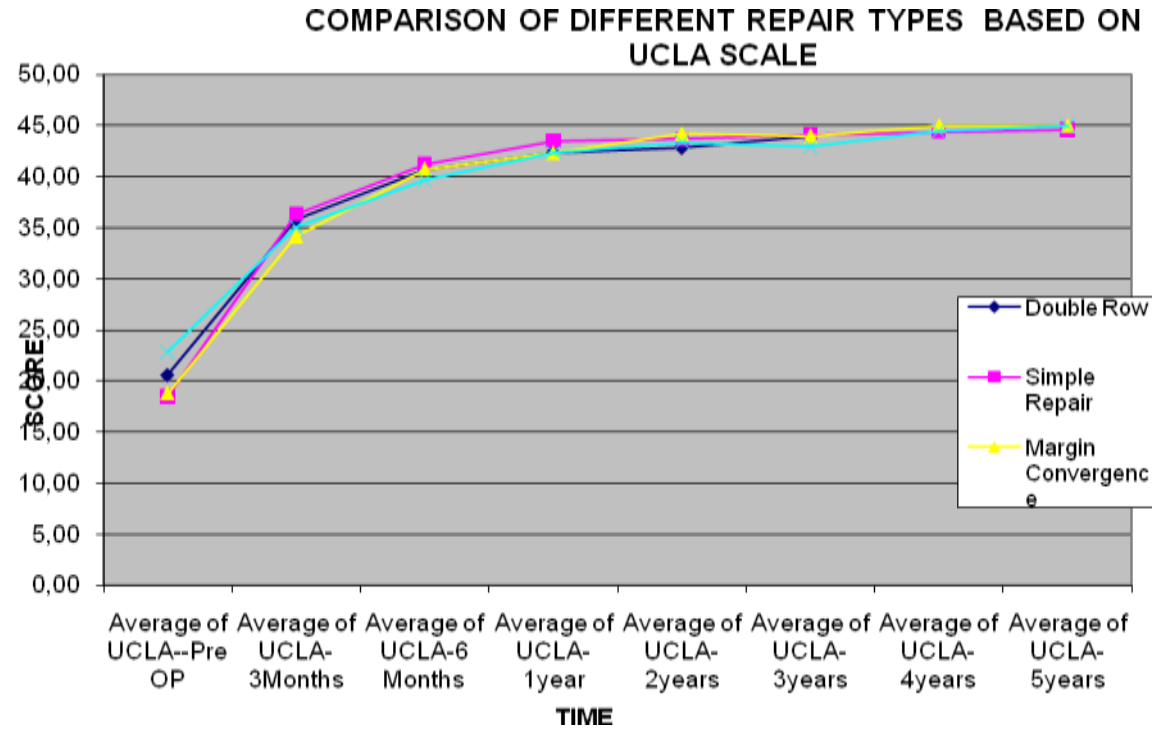


Table 7



Graphic 1