

Optimizing care on rotator cuff pathology

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10

Valorization

VALORIZATION

The treatment and understanding of rotator cuff pathology can be challenging and the path towards tissue degeneration and presence of shoulder complaints still remain partially unclear. The optimal approach towards degenerative rotator cuff tears is an ongoing topic of debate and the current evidence on how to treat these tears ultimately is scares. This thesis has provided supportive knowledge that is paramount to improve care on rotator cuff pathology and not solely includes treatment strategy.

In the early nineties, shoulder surgeons like Codman were rather surgically aggressive regarding the treatment of degenerative rotator cuff tears. Over the last years a tremendous effort has been put to solve the mystery of the most optimal treatment of these difficult to treat tears. The need for further clarification of this challenging condition in a population where age increases and shoulder dysfunction may lead to further increase in health expenses is obvious. From socioeconomical perspective rotator cuff pathology and probable concomitant functional impairment might have enormous effect on general well-being in daily life. The estimated lifetime societal savings of the approximately 250.000 rotator cuff repairs performed in the U.S. each year is \$3.44 billion and approximately 4.5 million patient visits related to shoulder pain occur each year in the United States. On the one hand it should be aimed to gain functionality as soon as possible but on the other hand indirect as well as direct health care costs should be kept low. In other words, both sides should be well balanced to be considered cost-effective. With the knowledge from the review article included in this thesis regarding several treatment options for degenerative rotator cuff tears it has shown us that multiple treatment options have comparable results. The TenCuRe trial was therefore conducted to study the cost-effectiveness of the isolated biceps tenotomy with or without rotator cuff repair. Unfortunately, preliminary termination of this trial did not answer this question, although much is learned from this rather large multidisciplinary designed project. From this thesis it is known that there is a tendency towards conservative treatment preferences which is based on experience rather than scientific evidence. Nuances from aggressive surgical repair towards non-surgical management should be made and further studied before conclusions are drawn. Even though the design of the TenCuRe trial was conducted with great care together with several highly appreciated shoulder experts, unfortunately an insufficient number of patients were enrolled. Revising its design by including a third conservative section and adjusting the inclusion criteria, could be considered. After a thorough evaluation, which was conducted before termination, valuable expert opinions were shared and elaborately discussed. Lessons learned from those who were involved in this trial could be spread amongst colleagues from the Dutch Shoulder and Elbow Society and residents, and thoughts provided for future

research goals. The societal and economic value of performing a rotator cuff repair is of paramount importance to support this treatment in future for the elderly, while below 60 years of age this treatment has proven its superiority. Many indirect and direct expenses should be considered in order to support this treatment in future as well as other joint- and non-joint preserving options. Support should be acquired from surgeons as well as health care insurance companies to continue our work the way we believe is best for our patients.

Optimizing rotator cuff pathology does not only include treatment, rotator cuff pathology specific health care improvement relies on optimal use of diagnostics as well. This thesis has shown that the prevalence of structural abnormalities is extremely and unexpectedly high which reflects that early tissue degeneration is rather common. While the MRI has proven its accuracy when it concerns detecting pathologic abnormalities, many of these findings do not implicate and clarify particular complaints in relation to atraumatic shoulder complaints. In general, one should thrive to reduce costs and use advanced imaging modalities as cost-effective as possible. Therefore, the use of other less costly options like the ultrasound as extension of our physical examination should be effectively incorporated on our daily out-patient care. Therefore, with great preservation, the MRI should be used to prevent overtreatment of unsuspected structural abnormalities so that expenses on diagnostics and treatment are kept fairly low. Having said that, highly accurate determined diagnoses prior to MRI should be correlated with the actual structural abnormalities revealed by the MRI.

Beside diagnostics and choosing the most optimal treatment modality, insight on pain and how to measure complaints and physical disability is provided in this thesis. Rotator cuff pathology, especially rotator cuff tears which are treated with a rotator cuff repair, could cause high levels of pain. Of course, pain can be managed with accurate analgesics but some postoperative immobilization devices are introduced to support the construct, contribute to comfort and reduce pain as well. From this thesis it is known that the abduction brace is not superior as compared to a simple and much cheaper antirotation sling, thereby reducing costs. Pain is believed to be multifactorial, though shoulder posture by itself does not seem to have significant influence. Widespread use and introduction of new and existing immobilization devices should be used with great care since their potential benefits, with cost-effectiveness in mind, should be studies extensively before its use should be incorporated in standard daily practice.

Research on rotator cuff pathology is conducted all over the world and many different measurement tools are used within different settings and scales. Of course, it is highly important that data is interpreted correctly and derived information is measured reliable and reproducible. Nevertheless, unawareness of unintended manipulations that causes misinterpretation of data may lead to false conclusions which have societal and economic impact. Therefore, two commonly used shoulder specific questionnaires were studied in great detail on reliability, reproducibility and effects of digitalization. While these questionnaires have proven to be reliable and reproducible, one should be aware of diversity in completion, use of different answering scales and administration modalities since they might influence outcome.

When taken together, rotator cuff pathology, especially degenerative rotator cuff tears, is a challenging condition, although this thesis managed to answer several important questions that contribute to optimize care and provide clinicians useful knowledge to improve their daily practice, reduce health care burden and increase quality of life.

In my view, future research should be aimed on personalized medicine and in order to accomplish such strategy, worldwide collaboration is of paramount importance. Similar and simplified measurement tools should be used and data should be stored in shared databases from where relevant research questions are formulated by expert opinion panels. Crossing borders and international collaboration should be endeavored. With great care, existing and new alternative joint preserving options should be studied and biomechanical background understood. Many ideas and lots of enthusiasm left to solve to mystery of the degenerative rotator cuff.

