

Exsys Case Study

Clinical Decision Support System for Tendon Injuries

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Flexor tendon injuries in the hand continue to be one of the greatest challenges in hand surgery and hand therapy. Despite the advances in surgical techniques, better understanding is needed of the tendon anatomy, healing process and sutures strength, edema, scarring and stiffness. The CDSS system focuses on flexor tendon injuries in Zone II, which is technically the most demanding in both surgical and rehabilitation areas. This zone is considered a “No Man’s Land” in which not many surgeons feel comfortable repairing.



It is very difficult and time consuming for both the hand surgeon and hand therapist working with tendon injury patients to keep up with the ongoing advances in this field. However, it is essential to be aware of all the information that would be potentially useful in making optimal clinical judgments. Exsys[®] software was used to build CDSS to support physicians by complementing their natural ability to make assessments. Major functions of the system include: supporting clinical diagnosis, treatment plan processes, promoting the use of best practices, condition-specific guidelines, and population-based management. In the medical field, knowledge automation expert systems are a widely used type of Clinical Decision Support System. Exsys rule-based decision support systems enhance the treatment and improve the outcome of these treatments.

The Clinical Decision Support System, developed using Exsys Knowledge Automation Software for Zone II flexor tendon injuries, encompasses the continuum from injury to complete rehabilitation of the tendon. The system architecture uses rule-based logic blocks to create a decision support system, which takes the user (hand surgeon, hand therapist, and other medical personnel) through a series of questions. Based on the users input, the system’s analysis will make recommendations for repair and rehabilitation for each particular situation. The CDSS takes the user through the entire process of a person’s hand injury involving the flexor tendon from the emergency room encounter to full recovery, including rehabilitation of the tendon.

With combined experience of 45 years, this system was tested by hand therapists, and plastic hand and orthopedic surgeons. Two out of three concurred that this system works well, encompassing the entire continuum of the flexor tendon injury and rehabilitation. They also agreed that the system is a good support tool making good decisions, and can be used by non-expert healthcare personnel.



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