A surgical planning software for orthopedic applications and its possible use in telemedicine

Session Telemedicine

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INTRODUCTION

With planning software a time-efficient and careful preoperative planning of surgical interventions is possible. Digital planning helps to fulfill the risen requirements to the documentation of operational interventions in the future. In addition the X-Ray foils in the course of digital x-ray units and screen-supported finding stations will ever more disappear.

In this paper on the basis of modiCAS-Planning the modules are described, which should be present in surgical planning software.

modiCAS® is a software framework, which supports the different steps of a surgical interference of preoperative planning over intraoperative navigation up to a mechatronic assistant system. By the modular and universal approach, which is pursued with the modiCAS project, it is possible to use the software for the planning of many different surgical interferences. The current main point of research lies in the hip endoprothetics.

COMPOSITOIN OF A PLANNING SOFTWARE

The planning software of the modiCAS project is modular developed. The central component contains graphic user interface and visualization. In order to ensure a fast and simple planning process, user-defined workflows can be defined.

For communication with picture servers a DICOM - interface is implemented. Over this interface graphic data will be loaded from a PACS system. Although finished plannings will be send to the PACS system through this interface. ModiCAS-Planning supports different modalities. With the hip and knee endoprothetics radiographs presents the state of the art.

In the planning process it is necessary to measure distances to put on lines or measure angles. These functions are realized in the module of planning objects. This module could be extended by new planning objects, if it is required.

Beside the planning objects also models of the implants are needed. These models can be present in the form of 2D- or 3D-Daten. Due to the large number of implants it is useful to administer the implant data in a data base. This data base illustrates likewise dependence between the individual implants.

Depending upon task and the preoperative existing graphic data for the time of planning not all necessary informations are available to provide an optimal planning. For this reason it is meaningful to complete planning intraoperativ. The necessary interfaces to navigation systems or intraoperativ existing picture-giving procedures must be created.

GOALS

It is our next goal to design a software framework for online discussion of medical plannings based on our existing framework. The users of this system should be able to make a surgical planning at different locations and to discuss their planning with other users via tele communication systems.

It is new that a whole planning of a surgical intervention will be the base for a discussion. Existing solutions allows it to discuss only 2D or 3D images. With the new solution each member of the discussion round should be able to modify the discussed planning online and visible to all other users.

CONCLUSIONS

In future digital planning will become ever more important. For an optimal work routine planning programs can be attached to PACS of systems.

For the acceptability it is important that the physician need no longer time as when he makes a conventional planning.

In order to reduce the expenditure of time further, semi automatically assistant functions offers a much promising starting point.

Further advantages arise as a result of the better documentation in the quality management and with forensic aspects.

REFERENCES

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