составляет около 10—12 см. Используем 2 стационарных и один мобильный навигационные зонды. Для сокращения уменьшения разреза кожи можно фиксировать зонд к бедренной и большеберцовой костях из отдельных мини-доступов. Профиль резекционных блоков для среза кости приспособлен для получения достаточного обзора в относительно небольшой операционной ране.

Программное обеспечение позволяет определить анатомическую и механическую оси нижней конечности, точнее наводить инструментарий и проводить резекцию края кости, принимая во внимание распределение мягких тканей вокруг коленного сустава.

В работе описана операционная техника, принципы и метод компьютерной навигации, преимущества по сравнению с операциями без использования навигации и оценка результатов, которых мы достигли в операциях с эндопротезом Columbus.

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METHA. MODULAR SHORT STEM PROSTHESIS

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In article opportunities of prosthetics a joint an artificial limb on a short leg with the help of navigating system the ortho-pilot are considered.

Key words: computer navigation, the ortho-pilot, an artificial limb on a short leg.

The Metha short stem prosthesis is intended for conservative total hip replacement and represents anew generation of implants. It combines three keyadvantages: modular construction, minimal stem sizeand an all-around coated surface, and thus facilitatesoperations that are as minimally invasive as possible.

It is particularly suitable for young patients with goodbone quality. Metha can be ideally implanted with orwithout the OrthoPilot navigation system.

The design continues the positive experiences madewith non cemented, metaphyseally anchored stems.The prosthesis concept allows implantation via thestump of the femoral neck, with conservative treatmentof the bone in the femoral neck and in thegreater trochanter region, preserving the bone, softtissue and muscle. While the position of the Metha stem leads to primary load stability, the Plasmapore μ-CaP coating over the entire proximal surfaше supports rapid secondary fixation.One of the special advantages of the system is itsmodular design with various neck adapters. This decouples the stem position from that of the head,which makes it possible to a large extent to adapt the stability and mobility of the joint to the individua patient.

Metha is at the leading edge of technology in other ways also. The implantation instruments are as sophisticated as they are simple. Finally, combination with the OrthoPilot navigation system offers increasedpossibilities for hip replacement surgery. If you wish, it can assist you in joint reconstruction and inachieving the optimum range of movement, while leaving you free to choose the sequence in which younavigate the prosthesis stem and the acetabular cup.

Metaphyseal anchoring. Gentle bone treatment. The non-cemented prosthesis stem is anchored metaphyseally within the closedring of the femoral neck. The greater trochanter region remains largely untouched.

Bone and muscle structures are preserved– a particular bonus for young and aktive patients with good bone structure.

Theconical design supports primary stability and proximal force transfer. The high primary stability is further enhanced by guiding the rounded tip of the stem slony the lateral cortex.

The Metha® stem has an all around Plasmapore® μ-CaP coating to support osteointegration. In a special procedure, the proven microporous Plasmapore surface is given a 20 мм thin layer of μ-CaP, very pure calcium phosphate.

This layer has an osteoconductive effect and accelerates contact between the bone and the prosthesis stem.

MIOS operating techniques. More gentle procedure. The higher osteotomy level and the more medial location of the stem opening makethe Metha prosthesis ideally suited for minimally invasive implantation techniques. The MIOS — Minimally Invasive Orthopaedic Solutions – instrument range has been carefully and specially designed for such procedures and for Metha, and gives excellent support in the most frequent approaches to the hip joint: special retractors and curved instrument profiles make smaller approaches easier.

Metha implantation. More simple surgery. Easy, uncomplicated instrumentation is a distinguishing feature of the Metha stem. The implant site is prepared usбny a canal finder and modular forming rasps.

Trial reduction and selection of the neck adapter is performed after stem implantation, thus permits very accurate adjustment and rapid definition of the point centre and the free range of movement.

Indication. The Metha® prosthesis stem is a modern implant for young and active patients. The indication spectrum includes degenerative coxarthrosis and femoral head necrosis. Good bone quality is the prerequisite for implantation.

Preoperative planning. Preoperative planning for the Metha short stem prosthesis is performed using front and lateral projection x-rays. In addition to the position of the joint centre and the leg length, the

planning of the resection height also takes into account the preservation of the approx. 5—10 mm thick ring of cortex around the femoral neck that is important for anchorage.

The osteotomy of the femoral neck is performed ideally at an angle of 50° to the femoral shaft axis. To aid intraoperative orientation, the distance from the lesser trochanter can be measured medially.

Femoral osteotomy. The femoral neck resection is performed in accordance with the preoperative planning.It usually begins approx. 10 mm above the junction of the greater trochanter and the neck of the femur and is ideбlky carried out at an angle of 50° to the femoral axis. Care must be taken to preserve a closed ring of cortex at least 5 mm thick around the neck of the femur.

Inserting the Metha® stem. The prosthesis stem to be inserted isselected according to the size of the finalrasp used. The Metha® stem is inserted manually and driven into its final firm position using the implantation instrument. The prosthesis does not need to be guided into place, as it follows the path made by the rasp.

OrthoPilot hip navigation. More accurate implantation.

Combining the modular stem with the OrthoPilot® navigation technology expanse the possibilities for hip replacement surgery.

After implantation of the stem component,OrthoPilot® simplifies the choice of neck adapter and assists the surgeon in achieving the best possible joint reconstruction.

The free choice in the sequence of cup and stem implantation and the modular adapters are customized to the individual patient – resulting in the optimum range of movement

Coclusion:

This navigation system can help more orthopaedic surgeons learn joint replacement surgical techniques and achieve excellent patient outcomes.Hip procedure results have been so positive that we will begin working on navigated hip replacements in most cases.

Despite these optimistic results, specialty-wide migration to computer-assisted navigation systems will not happen overnight. Physicians and hospitals considering these systems face two barriers: training and equipment cost.

Navigated joint replacement surgery is difficult and time consuming for surgeons to learn, even those who do many joint replacements throughout the year. Depending on the surgeon′s experience, the first few navigated procedures may takй as much as 30 to 45 minutes longer to perform.However, as physicians become more familiar with the technique and the demands associated with the computered-assisted navigation systйm, surgical time decreases significantly. Overall, the learning curve is relatively short, most surgeons are comfortable with the procedure within 15 cases.

Leading orthopaedic surgeons believe computered-assisted navigation system will replace fluoroscopy and other traditional joint surgeries because of the significant radiation risk involvedin the latter. We estimate that navigation will aid most orthopaedic procedures in ten years.

The advantages are just too great to ignore. Computer-assisted navigation system will also allow more orthopaedic surgeons to learn and apply minimally invasive techniques, leading to an increasing number of excellent outcomes.