Orthopaedic and spinal surgery

1. Staffs and Students (April, 2012)

Professor Atsushi OKAWA
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Graduate Student Hirotaka KOYANAGI, Masato YUASA, Dai UKEGAWA, Tsuyoshi YAMADA, Takashi TANIYAMA, Yoto OH, Madoka UKEGAWA, Yuki FUNAUCHI, Sei JO, Ren XU, Chengshan MA, Gaku KOYANO, Hidetoshi KABURAGI, Satoshi SUMIYA, Hidetsugu SUZUKI, Masanori SAITO

Department of Orthopaedic Research and Development
Associate Professor Shinichi Sotome, Yoshinori Asou

2. Activities

As the department of orthopaedic surgery, we execute medical treatment, research, and education in cooperation with the section of Orthopaedic Joint Surgery. Orthopaedics deals with musculoskeletal systems such as bone, cartilage, joint, tendon and muscle in addition to nervous systems such as spinal cord and peripheral nerves. Orthopedaics treats various disorders such as trauma, degeneration, neoplasm, and systemic disease. Thus, our research should be extended to a broad area of basic and clinical fields. Currently, our research projects include reconstruction of motor function, clinical application of regenerative medicine, development of biomaterials and artificial joints, and pain control.

(1) Research Subjects

1) Development and evaluation of a novel artificial bone – porous hydroxyapatite / collagen composite
2) Reconstruction of bone defects using bone marrow stromal cells and artificial bone substitutes
3) Reconstruction of bone defects using bone morphogenetic proteins and artificial bone substitutes
4) Analysis of the mechanisms of musculoskeletal aging and its prevention
5) Genome-wide analysis for bone and soft tissue tumor
6) Clinical applications of spinal cord evoked potentials
7) Development of novel diagnostic method for spinal cord function using magnetic field
8) Development of cell therapy to repair injured spinal cord
9) Development of multidisciplinary therapy for musculoskeletal malignant neoplasm

(2) Clinical Services

With the popularity of sports and aging society, the need for orthopaedic medicine is growing rapidly. We carry out not only treatment of the associated diseases but also the repair of functional disability for the improvement of QOL by advancing therapeutic strategies.

In spinal operation unit, microscopic or endoscopic surgery and spinal cord monitoring yield safety and secure decompression, resulting in early postoperative ambulation and satisfactory outcome.

Hand and upper limb surgery unit has applied microsurgical technique for atraumatic operation and micro-vascular anastomosis. Today, microsurgery is indispensable for re-implantation, nerve repair and transfer, and vascularized tissue transfer. Arthroscopic surgery for the upper limb is also available, and provides less-invasive operation alternative.

In musculoskeletal tumor surgery, limb-salvaging surgery is the first choice based on the concept of safety surgical margin from the systematic evaluation of surgical specimens. Also, functional reconstruction of the affected limb after tumor surgery is exerted by plastic and microsurgery technique and through the application of regenerative medicine.
Examples of advanced treatments for adult hip diseases are one-stage bilateral total hip arthroplasty, less-invasive technique for adult hip reconstruction, and accelerated rehabilitation after hip arthroplasty.

(3) Education
The faculty in the department is responsible for assisting graduate students in developing professional research, and teaching the skills of both clinical and basic science in the field of orthopaedic surgery. Morning conferences are held three times a week, and special guest lectures are sometimes provided to give up-to-date information. We are participating in the center of excellence program, frontier research on molecular destruction and reconstruction of tooth and bone in the Tokyo medical and dental university and providing a learning environment for the students.

For first year orthopaedic residents, an annual meeting is held to discuss clinical and basic research with the faculty outside of Tokyo. Furthermore, we provide several open meetings and many orthopaedic surgeons join our educational lectures to study recent clinical applications via special guest speakers or oral presentation of case reports by the residents.

3. Publications
Original Article


