

**Title: The outcome of iodine-coated endprostheses.**

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**Background**

Deep infection associated with implants remains a serious complication in orthopedic surgery. Infection rates after tumor surgery are very high particularly. We developed iodine coating for titanium implants. We reported the preliminary study of iodine-coated megaprotheses at the previous ISOLS meeting.

**Purpose**

In this study, we investigated the outcome of iodine-coated endprostheses.

**Patients and Methods**

We have treated 73 patients with malignant bone tumor or infected arthritis using iodine-coated endprostheses since 2008. The mean age of the patients was 51.1 years (12-85). Forty-three patients were male and 30 were female. The mean follow-up period was 31.6 months. The diagnoses included malignant bone tumor in 49 cases, infected total knee arthroplasty (TKA) in 16 cases, chronic osteomyelitis due to pyogenic arthritis in seven cases and loosening of TKA in one case. The iodine-coated implants used were 68 Kyocera Limb Salvage System (KLS) and 5 KOBELCO K-MAX K-3 (K-MAX). These endprostheses were used to prevent infection for 43 patients and to treat active infection for 30 patients. In patients with active infection, 13 patients underwent one-stage revisions while 17 staged revisions. White blood cell (WBC) and C-reactive protein (CRP) were measured pre- and post-operatively in all patients. To confirm systemic effects of iodine, thyroid hormone levels in the blood were examined. Both examinations were conducted sequentially for one year. After the operation, radiological evaluations were performed regularly.

**Results**

Infection was prevented in 42 out of 43 patients. Only one patient had surgical site infection caused by *Pseudomonas aeruginosa*, who was cured by intravenous administration of antibiotics alone without removal of the implant. In 30 treatment cases that underwent one-stage or staged revision surgery, infection subsided without an additional surgery. Among

patients with active infection, one showed late hematogenous infection two years after the operation. In all cases, there were no signs of infection at the time of the latest follow up. The median of WBC levels was almost normal range and CRP levels were returned to normal within three weeks after surgery. All primary revision cases were cured without additional surgery. Abnormalities of thyroid gland function were not detected and loosening of the implants was not shown in all patients. There were two patients with mechanical implant failure and six patients with loosening, which were recovered by re-implantation. In some cases, excellent bone ingrowth and ongrowth were found around iodine-coated endoprotheses.

**Conclusions**

The results suggested that iodine-coated endoprotheses can be very effective and promising in the prevention and treatment of postoperative infections. There were no cytotoxicity and adverse effects detected.



19 year-old female: one-stage revision surgery using iodine-coated prosthesis for postoperative infection

