



# Journal of Orthopedic Oncology

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## Surgical and medical outcomes

Complication rates between SR and RIA groups were comparable. No statistically significant difference between post-operative rates of wound complications, hardware failures, and fractures was found between groups. Among SR patients, 1.6% experienced wound complications, with 0% in the RIA group ( $p > 0.9$ ). Only one patient from each group experienced post-operative hardware failure ( $p = 0.3$ ). Among SR patients, 2.5% experienced post-operative fracture, with 0% in the RIA group ( $p > 0.9$ ). Post-operative rates of deep vein thrombosis did not differ among groups, with 4.1% in the SR group and 9.5% in the RIA group ( $p = 0.3$ ). Similarly, pulmonary embolism rates were comparable, with 2.5% in the SR group and 4.8% in the RIA group ( $p = 0.5$ ). Notably, there was no significant difference in unplanned reoperation rates between RIA (4.8%) and SR patients (2.5%) ( $p = 0.5$ ).

In terms of medical complications and oncologic outcomes, rates of pulmonary and cardiac complications were not different between groups ( $p > 0.9$ ). RIA and SR groups did not have significant differences in rates of local oncologic recurrence, with 5.2% of SR patients and 15% of RIA patients diagnosed with recurrence in the post-operative period ( $p = 0.13$ ). There was no significant difference in rates of progression of existing metastatic disease or new diagnosis of metastatic disease between groups ( $p = 0.5, > 0.9$ , respectively). There was no statistically significant difference between rates of unplanned ICU stay or unplanned hospital readmission between groups ( $p = 0.2, > 0.9$ ).

## Survival

There was no significant difference in post-operative death among groups, with 14.8% of SR patients and 14.3% of RIA patients passing within 30 days after surgery. ( $p > 0.9$ ). Cumulative survival rates were comparable between both reamer groups ( $p = 0.89$ ) (Table 2 and Figure 1).

## Discussion

Our study failed to demonstrate a difference in surgical and oncological outcomes in patients with metastatic bone disease (MBD) receiving femoral IMN with RIA versus SR for impending or complete pathologic fractures of the femur. Our findings are similar to another study by Streusel et al which found no statistically significant differences

between groups regarding pulmonary embolism, reoperation, and unplanned ICU stay or unplanned hospital readmission between groups ( $p = 0.2, > 0.9$ ).

in fracture healing, length of hospital or ICU stay, pulmonary complications, or death in patients who underwent IMN for femur fractures using RIA vs SR [14].

Despite the established benefits of IMN in patients with MBD, there are undeniable complications associated with reaming. One study conducted by Karanko et al. noted worsening intra- and postoperative oxygenation status after intramedullary reaming in patients with MBD with a previously healthy baseline oxygenation [15]. Other observed risks of reaming include embolization leading to pulmonary embolism, arterio-occlusive disease secondary to a paradoxical embolism, and fat embolism during IMN nail placement in femurs, especially when



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