Knee Implants: A Review

Context
Osteoarthritis is the most common form of arthritis, affecting 13% of Canadians. It is a condition in which the cartilage of the joint progressively wears out, resulting in pain, stiffness, and swelling. Osteoarthritis of the knee can be managed by non-surgical methods such as pain relief medication and weight loss, or surgical methods such as osteotomy (removing part of the bone to prevent rubbing on the damaged cartilage) or partial or full replacement of the knee with implants.

Technology
In full knee replacement surgery, all three components of the knee are replaced. If only the medial or lateral component of the knee is damaged, a smaller implant (unicompartmental implant) can be used to replace just that side. If the damage occurs in the patellofemoral joint (section behind the knee cap), a patellofemoral implant can be used. There are many different types of knee implants requiring various degrees of bone reshaping and cementing to fit the implant. A new type of unicompartmental implant for the medial joint, the OrthoGlide, requires no cutting or cementing of bone; it is inserted in the space between the bones, mimicking the function of cartilage.

Issue
Compared with other surgical options, partial knee replacement may provide benefits such as inflicting less surgical trauma and blood loss, reducing hospital stay and recovery time, and achieving more natural function. However, it can be challenging to choose which type of implant to use. Also, there is a risk of long-term failure and having to re-operate if the other parts of the knee also degenerate.

Methods
A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages
For partial knee replacement surgery:
- The Journey implant system (a type of patellofemoral implant) improves knee functions and reduces pain.
- Oxford phase 3 implants (a type of unicompartmental knee implant) improve knee functions.
- No evidence was found for OrthoGlide implants.

Results
The literature search identified 532 potential citations. Of these, 15 articles met the criteria for inclusion in this review: 3 systematic reviews, 2 randomized-controlled trials, and 10 prospective uncontrolled studies.