

**Title: Total knee arthroplasty in a patient with hemophilia A: a case-report detailing perioperative management**

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**Objective:** To present our experience regarding the perioperative management of a patient diagnosed with severe hemophilia A (HA) and undergoing elective total knee arthroplasty (TKA).

**Background:** Hemophilic arthropathy results from repeated intra-articular bleeding, leading to chronic inflammation and progressive joint destruction. TKA is an effective treatment to relieve pain and improve mobility in patients with advanced hemophilic arthropathy. However, in such a situation, the perioperative hemostatic management remains a challenge for the anesthesiologist.<sup>1-2</sup>

**Case history:** With patient's consent, we report the case of a 52-year-old male with severe hemophilia A (factor VIII level below 2%). He suffered from a significant bilateral destructive gonarthrosis consecutive to repeated hemarthrosis and resulting in chronic pain and reduced mobility affecting his quality of life. He was chronically treated with Emicizumab 150mg once a week. To ensure proper perioperative management, a strict multidisciplinary protocol was implemented. One hour before the procedure, the patient received a 40IU/kg intravenous administration of octocog alfa (Advate®; OA), followed by a factor VIII plasma level assessment 30 min later. The factor VIII target to proceed with the intervention was 80%. The patient received oral etoricoxib 120mg preoperatively and once daily for 3 days postoperatively. The chosen anesthetic technique was general anesthesia combined with an ultrasound-guided adductor canal block. Subsequently, the patient received 10IU/kg of OA 8 and 16 h after surgery. During postoperative day 1 to 3, the factor VIII target ranged between 60 and 80%. Adequate levels were achieved through the administration of OA 10IU/kg every 8 h, with dose adjusted according to the daily factor VIII biological controls. From day 4 to 6, administrations were spaced out by 12 h to target a factor VIII level between 40 and 60%. During day 7 to 9, the target was reduced to 30-40%, with OA injection only once a day. An adjunctive treatment with 2g oral tranexamic acid was also provided, once preoperatively and 3 times in a day postoperatively for 10 days. Thromboprophylaxis was limited to the intraoperative use of pneumatic compression on the non-operated lower limb. The postoperative course was favorable, with a multimodal adequate control of pain, optimal wound healing without dehiscence, and no hemorrhagic or infectious complications. The patient rapidly regained mobility, with a 10° extension and 130° flexion.

**Discussion and Conclusion:** TKA is an effective treatment of severe hemarthrosis-induced gonarthrosis in hemophilia patients, reducing pain, and improving mobility and quality of life. The perioperative management of these patients requires a multidisciplinary approach, the rigorous adherence to a predefined protocol of repeated factor VIII plasma level controls and scheduled OA administrations.

**Declaration of interests:** MC has received interview and speaker's honoraria from GE Healthcare, Baxter and Aguetant. VB has received funds and research support from Orion Pharma as well as honoraria from Medtronic. He has financial relationships with Grünenthal. He is Deputy Editor-in-Chief of the Acta Anaesthesiologica Belgica, and has a consultancy contract with Edwards Medical.

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