



Case Report

A Rare Cosmetic Lengthening Complication Causing Precice Stryde Nail Failure: A Case Report

Muharrem Kanar,¹ Enver Ipek,¹ Suleyman Cakirturk²

¹Department of Orthopaedics and Traumatology, Şişli Hamidiye Etfal Research and Training Hospital, İstanbul, Türkiye

²Department of Orthopaedics and Traumatology, Afyonkarahisar State Hospital, Afyonkarahisar, Türkiye

Abstract

Limb-lengthening surgeries have been described for medical and cosmetic treatment. Innovative surgical procedures and various instrumentation techniques have been developed with advancing technology. Remote-controlled intramedullary lengthening nail systems (RCILNS) are frequently used in limb-lengthening surgery. In the literature, few surgical complications have been reported in limb-lengthening surgery. Here, we present a case of an unexpected complication caused by a filling material previously applied for gluteal augmentation in a patient who underwent cosmetic limb-lengthening surgery.

Keywords: Bone lengthening, complications, fracture fixation, intramedullary

Please cite this article as "Kanar M, Ipek E, Cakirturk S. A Rare Cosmetic Lengthening Complication Causing Precice Stryde Nail Failure: A Case Report. Med Bull Sisli Etfal Hosp 2026;60(1):120-123".

Limb-length discrepancy and/or short stature can be a congenital or acquired disorder, which has potentially negative effects on the psychosocial life of patients. Many methods have been described in orthopedic surgery for such patients to obtain an aesthetic and functional extremity. Medical limb-lengthening is mostly performed in patients with congenital or acquired disorders including dwarfism, fracture sequelae, or endocrinological disease. Cosmetic lengthening is performed to individuals with no medical disorder but who are negatively affected by short stature in psychosocial terms. Age is one of the most important determinants for limb-lengthening surgery. Medical lengthening can be performed in all age groups, starting with those of preschool age, but cosmetic lengthening should only be applied to adults when linear bone growth cannot be facilitated with medical intervention.

Patients must be informed about complications that may occur during and after limb-lengthening surgery, such as non-union, delayed union, infection, and stiffness of joint motion.^[1,2] Psychiatry consultation may also be crucial for patients undergoing cosmetic limb-lengthening.^[1,2]

Although external fixators were used initially in limb-lengthening surgery, technological innovations have led to the development of new RCILNS. These systems are frequently used in limb-lengthening surgery. The new nail systems provide a more comfortable lengthening period and allow a shorter surgical incision; therefore, there is less scarring.^[3]

Lengthening intramedullary nails are divided into two categories: mechanical lengthening systems and nails that can be lengthened by remote control.^[4,5] Lengthening is provided by various manoeuvres in mechanical systems,

Address for correspondence: Enver Ipek, MD. Department of Orthopaedics and Traumatology, Şişli Hamidiye Etfal Research and Training Hospital, İstanbul, Türkiye

Phone: +90 506 929 78 04 **E-mail:** enveripek88@gmail.com

Submitted Date: April 10, 2025 **Revised Date:** May 9, 2025 **Accepted Date:** May 29, 2025 **Available Online Date:** March 23, 2026

©Copyright 2025 by The Medical Bulletin of Sisli Etfal Hospital - Available online at www.sislietfaltip.org

OPEN ACCESS This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>).



and the procedure may lead to technical difficulties in an operated extremity. Therefore, RCILNS have been preferred in recent years. Motorized nails are available as Fitbone® (Wittenstein, Igergheim, Germany) and Precice® (Ellipse Technologies, Inc, Irvine, CA, USA).^[6,7] The Precice Stryde® nail was developed as a third-generation nail, and the most important difference of this generation from others is the load-bearing capacity. It is possible to mobilize freely during the lengthening and consolidation periods, which facilitates the rehabilitation of the patient.^[8]

In this case report, a patient is presented who developed an unexpected lengthening complication as a result of gluteal augmentation with aquafilling. Aquafilling is a type of dermal filler that has similar properties to human tissue and has a long post-treatment effect and is used for breast, hip, and leg augmentation. Aquafilling is a hydrogel-based dermal filler consisting primarily of saltwater and polyamide components. Although aquafilling gel has not been approved by the FDA due to some complications, it has been approved and used in some countries, including Türkiye, Serbia, Malaysia, Japan, and Korea. The most common complication described in the literature is the migration of the gel, as a result of which complex cystic lesions may develop in mucous, heterogeneous internal structures.^[9-11]

Case Report

A 43-year-old female, 155 cm in height, underwent bilateral femoral intramedullary nailing (Precice Stryde) for cosmetic limb lengthening in another hospital in 2019. She had undergone gluteal aquafilling augmentation in 2010. As augmentation with aquafilling is an injectable method, no incision could be observed in the corresponding area. In her anamnesis, she stated that a previous cosmetic procedure had not been questioned before the limb-lengthening surgery; therefore, she did not consider it necessary to inform the physicians about this procedure, and the aquafilling injection was not declared in the preoperative history.

Postoperatively, the patient was informed and questioned about the leakage of a gel-like material in the surgical field during lengthening surgery, and the patient then stated that gluteal aquafilling augmentation had been performed almost 10 years previously. On the 24th day, she went to the center where she had surgery because of increasing complaints. Erythema and serous fluid leakage were present at the bilateral incisions. No microbial agent was detected in the culture. Laboratory examinations did not support the presence of infection, and the patient did not have fever. The lengthening procedure was completed as planned, but repeated debridements and aspirations were required

due to recurrent pain and gel discharge. The patient's right side was debrided again about 1 year later, and the lengthening nail was replaced with a rigid trauma nail.

The patient presented to the outpatient clinic of our hospital 1.5 years postoperatively with complaints of sudden severe pain in the left hip joint and swelling and pain in the right knee. The laboratory findings of the patient were normal. Radiological examination revealed non-union and implant failure with angulation at the left osteotomy site, and aquafilling material was detected in magnetic resonance imaging and X-rays (Figs. 1 and 2). Informed consent was obtained from the patient before the surgical procedures and for publication of this case.

The broken left Precice Stryde nail was exchanged for a femoral trauma nail, and the right knee joint was irrigated and debrided. Gel-like fluid leakage was observed from the incision and osteotomy site in the left femoral area, and samples were collected for microbiological and pathological examination (Fig. 3). Microbiological examination was negative. "Active chronic inflamed connective tissues with degenerative changes" were detected in the pathological examination. The patient did not show any signs of infection postoperatively. No complications were observed in the early postoperative period; therefore, the patient was mobilized and discharged.

In the third week of follow-up, leakage was detected at the left site. The wound was drained and irrigated. In the postoperative second month, the patient was hospitalized again because of the same complaints. Vacuum-assisted closure treatment was applied, but it did not work because

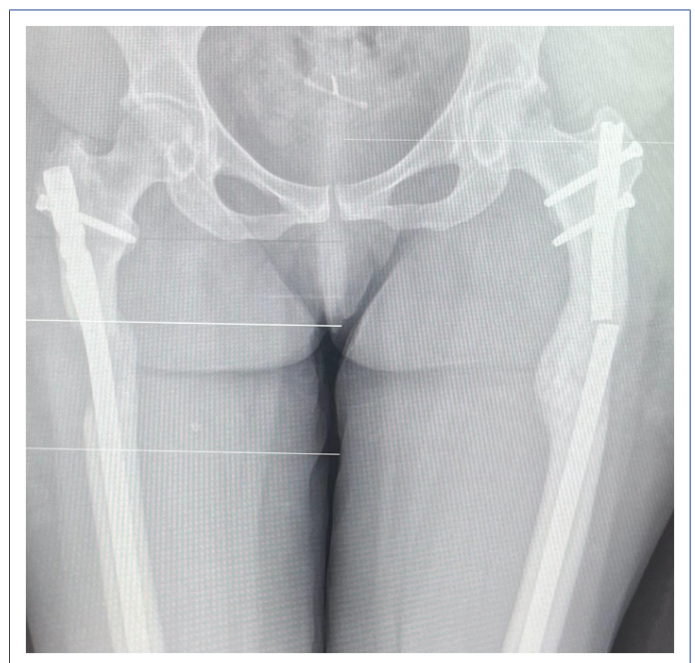


Figure 1. Broken Precice Stryde nail observed on the left femur.

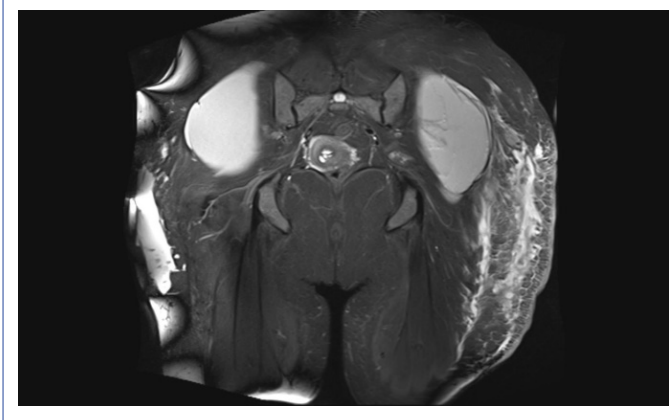


Figure 2. AAquafilling material visible on magnetic resonance imaging (MRI).

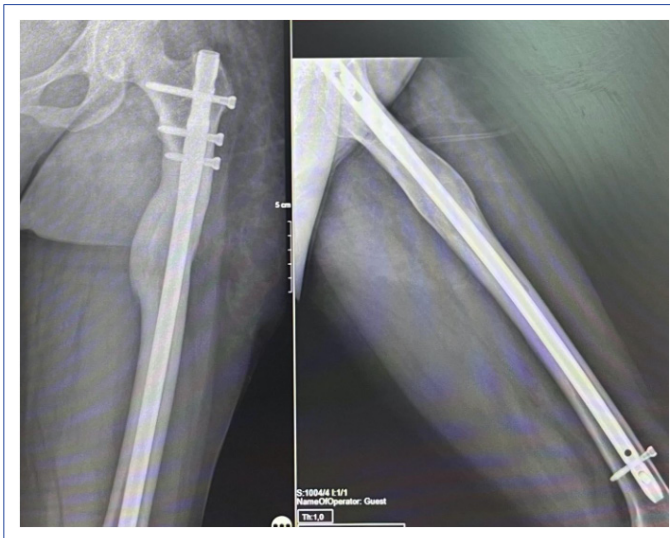


Figure 3. Bone union observed at the final follow-up.

of the gel. The wound was irrigated and closed again, and the patient was discharged without any wound complications. The bone healed without any infection or complication after six months (Fig. 4).

Discussion

Many complications have been reported in extremity lengthening surgeries, including non-union, infection, and limitation of movement.^[1,3] Although complication rates have decreased with the development of RCILNS, which are amenable to weight bearing, new complications have emerged with these new systems. In a study of 24 patients by Schiedel et al.,^[12] implant failure was observed in 2 patients during the consolidation period.

Wound problems and infections are not common in lengthening surgeries performed with fully implantable intramedullary nails. Karakoyun et al.^[13] reported no infection in

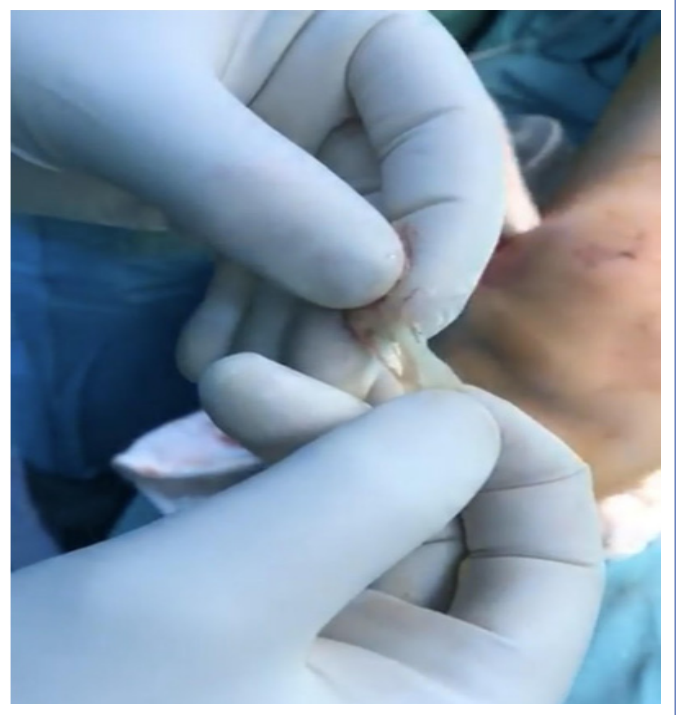


Figure 4. Macroscopic view of the aquafilling gel intraoperatively.

any of 11 cases in a study of lengthening surgery with intramedullary nails. In the current case, a wound complication developed and debridement surgery had to be planned, but no microbial agent was detected in the culture samples. Non-union and delayed union are among the most frequently reported complications of lengthening surgery. Kenaway et al.^[14] reported delayed union or non-union in 8 of 37 patients who underwent intramedullary lengthening. It has been reported in the literature that the highest risk factors include uncontrolled rapid lengthening, lengthening >40 mm, age >30 years, and smoking.^[14]

Complications related to filler migration have been reported predominantly in the plastic and reconstructive surgery literature; however, it remains unclear how such complications should be managed by orthopedic and traumatology surgeons.^[10] In this case, an inflammatory reaction occurred after gel migration to the osteotomy site, and delayed union was the main problem. Irrigation and debridement of the gel material and exchange of the intramedullary nail were successful treatments for this complication. Similarly, Safi et al. reported that both FITBONE and PRECICE motorized intramedullary lengthening nails provided comparable clinical, radiological, and functional outcomes with acceptable complication rates.^[15] In patients undergoing aesthetic leg lengthening surgery, preoperative screening for previously performed cosmetic filler procedures should be conducted. Imaging modalities such as MRI may assist in identifying displaced filler materials.

Conclusion

Migration of previously injected aquafilling gel used for gluteal augmentation was observed to cause insufficient regeneration at the osteotomy site, and secondary intervention with debridement and irrigation was required due to wound complications. It also resulted in delayed union. Since patients with aesthetic concerns are likely to request these surgeries more frequently in the future, clinicians must be aware that some previous aesthetic procedures cannot be detected during physical examination. Reporting this unusual complication may provide guidance for orthopedic and traumatology surgeons. Animal studies may help clarify the pathophysiological mechanisms of these complications.

Disclosures

Ethics Committee Approval: This is a single case report, and therefore ethics committee approval was not required in accordance with institutional policies.

Informed Consent: Patient Consent Statement Written informed consent was obtained from the patient for the publication of this case report and any accompanying images. The patient was informed that personal information would be kept confidential and that all identifying details would be removed to ensure anonymity.

Conflict of Interest: The authors declare that there is no conflict of interest.

Financial Disclosure: This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Use of AI for Writing Assistance: Our study did not use artificial intelligence (AI)-supported technologies (Large Language Models [LLMs], chatbots, or image generators such as ChatGPT).

Authorship Contributions: Concept – M.K.; Design – M.K.; Supervision – M.K.; Fundings – S.C.; Materials – E.I.; Data collection &/or processing – S.C.; Analysis and/or interpretation – E.I.; Literature search – E.I., S.C.; Writing – M.K.; Critical review – E.I.

Peer-review: Externally peer-reviewed.

References

- Kocaoglu M, Eralp L, Kilicoglu O, Burc H, Cakmak M. Complications encountered during lengthening over an intramedullary nail. *J Bone Jt Surg* 2004;86:2406–11. [\[CrossRef\]](#)
- Armagan R, Kucukkaya M, Ozdemir HM. The use of ilizarov method at the lower extremity deformity management. *Sisli Etfal Hastan Tip Bul* 2023;57:263–71. [\[CrossRef\]](#)
- Singh S, Lahiri A, Iqbal M. The results of limb lengthening by callus distraction using an extending intramedullary nail (Fitbone) in non-traumatic disorders. *J Bone Joint Surg Br* 2006;88:938–42. [\[CrossRef\]](#)
- Krieg AH, Lenze U, Speth BM, Hasler CC. Intramedullary leg lengthening with a motorized nail. *Acta Orthop* 2011;82:344–50. [\[CrossRef\]](#)
- Acan AE, Basci O, Havitcioglu H. Aneurysmal bone cyst healing response with intramedullary lengthening nail. *Acta Orthop Traumatol Turc* 2018;52:232–5. [\[CrossRef\]](#)
- Cole JD, Justin D, Kasparis T, DeVlught D, Knobloch C. The intramedullary skeletal kinetic distractor (ISKD): first clinical results of a new intramedullary nail for lengthening of the femur and tibia. *Injury* 2001;32(Suppl 4):SD129–39. [\[CrossRef\]](#)
- Dinçyürek H, Kocaoğlu M, Eralp IL, Bilen FE, Dikmen G, Eren I. Functional results of lower extremity lengthening by motorized intramedullary nails. *Acta Orthop Traumatol Turc* 2012;46:42–9. [\[CrossRef\]](#)
- Baumgart R, Betz A, Schweiberer L. A fully implantable motorized intramedullary nail for limb lengthening and bone transport. *Clin Orthop Relat Res* 1997;135–43. [\[CrossRef\]](#)
- Calder PR, McKay JE, Timms AJ, Roskrow T, Fugazzotto S, Edel P, et al. Femoral lengthening using the Precice intramedullary limb-lengthening system: outcome comparison following antegrade and retrograde nails. *Bone Joint J* 2019;101-B:1168–76. [\[CrossRef\]](#)
- Peters W, Fornasier V. Complications from injectable materials used for breast augmentation. *Can J Plast Surg* 2009;17:89–96. [\[CrossRef\]](#)
- Kim J, Chang H, Park JU. Complication of ruptured poly implant Prothèse® breast implants combined with AQUAfilling® gel injection: a case report and literature Review. *Aesthetic Plast Surg* 2019;43:46–52. [\[CrossRef\]](#)
- Schiedel FM, Vogt B, Tretow HL, Schuhknecht B, Gosheger G, Horter MJ, et al. How precise is the PRECICE compared to the ISKD in intramedullary limb lengthening? Reliability and safety in 26 procedures. *Acta Orthop* 2014;85:293–8. [\[CrossRef\]](#)
- Karakoyun O, Küçükaya M, Sökücü S. Intramedullary skeletal kinetic distractor in lower extremity lengthening. *Acta Orthop Traumatol Turc* 2014;48:307–12. [\[CrossRef\]](#)
- Kenaway M, Krettek C, Liodakis E, Meller R, Hankemeier S. Insufficient bone regenerate after intramedullary femoral lengthening: risk factors and classification system. *Clin Orthop Relat Res* 2011;469:264–73. [\[CrossRef\]](#)
- Safi İKA, Samadov F, Kantar M, Tüter İ, Özdemir HM. Deformity correction and limb lengthening with externally controlled motorized extendable intramedullary nails: Comparison of 2 different nails. *Acta Orthop Traumatol Turc.* 2023 Jul;57(4):169-175. doi: 10.5152/j.aott.2023.23026. [\[CrossRef\]](#)