The use of pedicle screws in low bone quality patients implicates risks of secondary implant loosening for grip lack. In fact, the result is a reduced mechanical stability at bone-screw interface and consequently an increased chance of pullout and hardware failure. Augmentation techniques have been described for many years and fenestrated screws that allow cement injection is one of them.

In a retrospective observational study of patients treated with polymethylmethacrylate- (PMMA) augmented fenestrated screws. Indications for posterior instrumentation were traumatic fracture in osteoporotic spine, oncological disease, post-traumatic deformity, degenerative disease, revision surgery and sickle cell disease fractures. Implant stability was evaluated with X-Rays and CT scan performed 3 days after surgery and every 3 months during the follow-up. Accuracy of screw placement was evaluated with Heary classification. Fifty-three surgical treatments in 52 patients were performed and 247 PMMA augmented fenestrated screws were placed. According to the Heary classification, 96.21% resulted Grade I, 1.8% Grade II, 2% Grade IV. A total of 17 complications occurred. Fenestrated screw augmentation should be performed in selected patients in whom the bone quality is insufficient to guarantee implant stability. These screws may result useful in complex cases as revision surgeries, osteoporosis and tumour affections where bone quality is highly compromised [1)].

1)
Ghermandi R, Pipola V, Colangeli S, Parchi P, Andreani L, Capanna R, Gasbarrini A. Polymethylmethacrylate-augmented fenestreted pedicle-screw fixation in low bone quality patients: a case series and literature review. J Biol Regul Homeost Agents. 2018 Nov-Dec;32(6 Suppl. 1):71-76. PubMed PMID: 30644285.