P < 0.0001) with much higher ferritin levels [68 (22–105) vs 408 (242–534) µg litre⁻¹, P < 0.0001], despite a good declared observance of oral iron (88% of the patients declared full compliance, which was confirmed by the observation of black stools). Moreover, side-effects associated with FCM were low [1 (3%) subcutaneous diffusion and 1 (3%) patient with dark urine] compared with 7 (37%) patients receiving oral iron (P = 0.009) [3 (16%) constipations, 2 (11%) diarrhoea (22%), 2 (11%) abdominal pain, and 2 (11%) nausea].

In conclusion, the use of FCM, compared with oral iron, increases EPO response, with increased discharge haemoglobin levels, and prevents the depletion of iron stores induced by EPO. This could be another benefit of i.v. iron, as depleted iron stores may impair the correction of postoperative anaemia. In addition, there is accumulating evidence that iron deficiency per se, independently of anaemia, is associated with fatigue and muscle weakness. Thus, the correction of iron deficiency, with or without anaemia, could be effective in improving fatigue and physical performance.

Declaration of interest
S.L. received consulting fees from Vifor Pharma, but Vifor Pharma was not implicated in this study at any stage.

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Malleable stylet in difficult intubation: a modified technique

Editor—In anaesthesia practice, 1–4% of patients require multiple attempts during tracheal intubation. A difficult intubation is a complex interaction of patient factors, clinical setting, and the skills of the practitioner. A number of intubation aids and equipment including intubating guides, lighted stylets, bougies, laryngeal mask airways, and video-laryngoscopes are now available for unanticipated difficult tracheal intubation. In situations when airway adjuncts are not readily available, a malleable stylet which is usually a part of basic equipment for tracheal intubation may be used with a different technique. The conventional method of using a malleable stylet during tracheal intubation is well known. We describe our experience of the use of a malleable stylet in adult patients with laryngoscopic view of Cormack–Lehane (CL) grade III even after optimal external laryngeal manipulation. An adult malleable stylet (Portex®, Smith Medical, non-USA) which has a soft tip (1.0 cm) was used with a modified technique in difficult intubations. The malleable stylet was well lubricated and was inserted with the tip of the stylet curved upwards 20° protruding nearly 2.0 cm beyond the tip of the tracheal tube (TT) (Fig. 1a). The anaesthesiologist performing laryngoscopy inserted the assembly in the mouth and directed it along the dorsal surface of the epiglottis so that the tip of the stylet came to lie in front of the glottic opening (not visible in patients with CL grade III). This was followed by a synchronized movement of insertion of 1.0 cm of TT by the anaesthetist and was inserted with the tip of the stylet curved upwards 20° protruding nearly 2.0 cm beyond the tip of the tracheal tube (TT) (Fig. 1a). The anaesthesiologist performing laryngoscopy inserted the assembly in the mouth and directed it along the dorsal surface of the epiglottis so that the tip of the stylet came to lie in front of the glottic opening (not visible in patients with CL grade III). This was followed by a synchronized movement of insertion of 1.0 cm of TT by the anaesthetist along with simultaneous gradual withdrawal of the stylet by 1.0 cm by an assistant (Fig. 1a). The tip of the TT at this point was in front of the glottic opening, which was then inserted, further in the trachea while the stylet was gradually withdrawn (Fig. 1c). So far, this modified technique has resulted in successful tracheal intubation in our patients with CL grade III with no adverse effects or airway trauma. The principle of our technique is somewhat similar to the use of a bougie but differs...
as bougie lacks inherent strength and rigidity of a malleable stylet. However, we would like to emphasize that the modified technique be used only by an experienced anaesthetist with a trained assistant when other advanced airway gadgets are not readily available.

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Real-time ultrasound-guided epidural anaesthesia technique can be improved by new echogenic Tuohy needles: a pilot study in cadavers

Editor—Ultrasound imaging accurately estimates the depth of needle insertion and optimizes the intervertebral level location.1,2 However, visualization of deep vertebral canal and a steep angle for needle insertion rendered real-time ultrasound guidance difficult.3 Ultrasound guidance on a cadaver4 permits development of technical confidence near to real procedure experience. New echogenic needles characteristics improve the visibility of the tip and shaft during punctures at angles > 30°.5 The aim of this study was to evaluate three types of Tuohy needles (standard, echogenic, and curved echogenic) during ultrasound-guided epidural lumbar punctures in cadavers. We hypothesized that echogenic needles and curved design can increase tip visibility and improve the positioning during a real-time procedure in cadavers.

Three types of needles (Pajunk, Geisingen, Germany) were compared: Tuohy needle; echogenic Tuohy needle; echogenic Tuohy needle curved model (Fig. 1). Twelve sets of three ultrasound-guided epidural punctures (36 punctures) were performed in two cadavers lying in the prone position. Needles’ use was randomized for each cadaver on the two sides and three intervertebral spaces. Four experienced anaesthesiologists performed three puncture sets for each needle. Interspaces and cadaver sides were to mimic different angles and anatomic variations. A real-time ultrasound-guided (2–5 MHz transducer, Logic E8, GE Healthcare, USA) paramedian oblique approach was used.5 The final target was to locate the needle tip at the level of the epidural space. The mean (so) or median (IQR) were used. The Wilcoxon test and Bonferroni correction for pairwise comparisons were used. Interactions between the type of needle, the operator, cadaver side, and intervertebral space punctured were analysed with a mixed model. Visibility of needle tip, quality of ultrasound image, and physician comfort were significantly better with echogenic needles. The visibility of the tip and physician comfort during the procedure were significantly higher with the echogenic curved needle compared with the other two needles (Fig. 2), but image quality was only significantly better than the standard model. The type of needle was a factor that may explain the difference found on the visibility of the tip (P = 0.0002). There were no significant differences regarding the duration of the procedure, the number of bone contacts, and needle redirections.

Our study highlights that in cadavers, echogenic needles can improve real-time performance for needle tip visibility, image quality, and physician comfort. The echogenic curved Tuohy needle particularly improved these parameters. A real-