Sir,

A magnetic resonance imaging (MRI) study consists of multiple image sequences, each taking up to 10 min to acquire. Any movement during the procedure produces profound distortion of the final images obtained. This is especially problematic in the pediatric population and some adult patients with mental retardation or those suffering from claustrophobia. It often becomes necessary to provide either sedation or general anesthesia (GA) to these patients.

When administering GA to such patients, airway management remains a challenge because of extremely restricted access to patient’s airway and limitation of availability of suitable devices to secure the airway.[1,2]

Supraglottic airway devices (SGDs) are a favorite choice when administering anesthesia to these patients. As compared to endotracheal tubes (ETT), the use of SGDs during MRI studies under GA has shown to significantly improve image quality.[3] However, only specially designed MRI-compatible SGDs can be used in the MRI suite. Non-MRI compatible SGDs have ferromagnetic material in their spring-loaded valve, which leads to reduced image quality, spurious interpretations of the film, and unnecessary wrong diagnoses.[4] The extent to which the image quality gets compromised depends on the quantity of ferromagnetic material within the field, the pulse sequence used, and the distance between the area of interest and the SGD.[3]

MRI compatible SGDs are more expensive and may not always be available at places where resources are limited, especially in remote locations such as the MRI suite. We thus attempted to convert a size 2.5 Ambu® Aura40™ laryngeal mask airway (LMA) into an MRI compatible device using the following technique:

• The existing inflation assembly of the LMA (containing the ferromagnetic substance) was detached [Figure 1a]

• The inflation assembly of a red rubber ETT was obtained. As is known, this assembly does not have any spring loaded valve mechanism, thus rendering it free of any ferromagnetic substance [Figure 1b]

• Approximately 3 cm length from the sheath of an 18-gauge intravenous (IV) cannula was cut out [Figure 1c]

• The inflation assembly of the red rubber tube was connected to the broken end of the inflation line of the LMA using the IV cannula sheath as a bridge [Figure 1d and e]

• Using this assembly, the cuff of the LMA was inflated with 21 ml of air as recommended for a size 2.5 LMA and observed for 5 min. The cuff remained inflated. After 5 min, the cuff was deflated completely with syringe yielding 21 ml of air, thus confirming the absence of leak

• Convinced of proper functioning of the device, it was autoclaved and was subsequently used for administration of GA to children (body weight 20–30 kg) in the MRI suite uneventfully.

Thus, with this minor and simple modification, we were able to convert the Ambu® Aura40™ LMA into an MRI compatible device. This method can be used to convert almost any SGD of any size into an MRI compatible device. This is relevant, especially in a country with limited resources like ours. Indeed, revisiting the past can often solve a lot of modern day problems.

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Conflicts of interest
There are no conflicts of interest.

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Figure 1: (a) A size 2.5 Ambu® Aura40™ laryngeal mask airway with a detached inflation line, (b) inflation assembly of a red rubber endotracheal tube, (c) approximately 3 cm length of the sheath of an 18-gauge intravenous cannula, (d) various components placed together, (e) final magnetic resonance imaging compatible device
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Sir,

Successful brachial plexus block requires detailed knowledge of gross anatomy, knowledge of the relevance of muscle twitch when a nerve stimulator is used, and knowledge of sonoanatomy when the block is planned under ultrasound guidance. The groove between the anterior and middle scalene muscle is the landmark where the drug is injected by landmark technique, and the stimulating needle is placed when a nerve stimulator is used to perform an interscalene block. Similarly, when ultrasound is used for performing the block, the two scalene muscles are identified, and the C5–C7 roots are traced in the interscalene groove.\[1,2\]

However, sometimes the roots do not follow the rule of being placed in the groove. When they deviate from the regular position, the brachial plexus is also known by a different name. It is called a pass-through brachial plexus when the roots of brachial plexus pass through the anterior scalene muscle and a pass-over brachial plexus when the ventral rami of brachial plexus pass over the anterior scalene muscle.\[3\]

Usually, C5 or C5–C6 roots travel this pathway. The possibility of all C5–C7 roots passing over anterior scalene muscle is rare. This anomalous location of the root is the reason for a failed or a patchy interscalene block when landmark technique is used and when the block is performed with a nerve stimulator. The block can fail with the use of ultrasound if the performer fails to recognize a pass-over or a pass-through plexus.

During a random neck scan of a patient who was not scheduled to undergo a surgery of the upper limb, we identified a C5–C6 nerve root passing over the anterior scalene muscle instead of the usual location that is in the interscalene groove\[Figure 1\]. In such situation, the C5–C6 roots have to be blocked separately in the substance of anterior scalene muscle. However, the problem with this injection in the belly of anterior scalene is that the injected local anesthetic might block the phrenic nerve as well.

The phrenic nerve arises from C3 to C5 and is usually in proximity to the C5 root at the level of cricoid cartilage. From here, the nerve descends in a caudal direction over the anterior scalene muscle.\[4\]

Therefore, once a pass-over brachial plexus is identified, a meticulous scan should be performed to ensure correct placement of the needle.

Implications of Pass-over Brachial Plexus

Figure 1: The image shows C5–C6 root over the anterior scalene muscle rather than the groove between anterior and middle scalene muscle. The C7 root is seen in the usual location that is the interscalene groove. The interscalene groove is shown with the black line between anterior and middle scalene muscle.