

Alternative connector for anesthetic and calcium hydroxyapatite dilution in the cutaneous filling technique

Conector alternativo para diluição de anestésico e hidroxiapatita de cálcio para preenchimento cutâneo

ABSTRACT

A number of anesthetic options are available for use in cutaneous fillings. The combination of calcium hydroxyapatite with lidocaine in the same syringe using the female Luer Lok connector has been recently described. An additional connector option to combine these substances, the device itself, and the details of the association are described.

Keywords: anesthetics; local; hydroxyapatites; association; syringes.

RESUMO

Várias opções de anestésicos são utilizadas para preenchimentos cutâneos. Recentemente foi descrita a combinação da hidroxiapatita de cálcio com lidocaína na mesma seringa utilizando o conector fêmea-fêmea Luer-lok. Descrevem-se outra opção de conector para realização dessa mistura, o instrumento e detalhes da associação.

Palavras-chave: anestésicos locais; hidroxiapatitas; associação, seringas.

INTRODUCTION

Dermatologists have been using calcium hydroxyapatite (CaHA) as a cutaneous filler in the subdermal plane in cosmetic treatments. CaHA is composed of microspheres with a diameter of 25 to 45 millimeters, suspended in a glycerine and sodium carboxymethyl cellulose aqueous gel. After several weeks in the skin, the aqueous gel is replaced by fibroblasts and extracellular matrix, and the CaHA microspheres remain in the area to provide mechanical support.

The filler is applied with a 25–27G, 0.5 to 1.5 cm long needle, following local anesthesia.

Topical, nerve block, infiltrative or a combination of these types of anesthesia are options employed using this procedure. The addition of anesthetic agents and CaHA in pre-loaded syringes has recently been used to induce enough anesthetic effect without the loss of the product's physiochemical properties. In 2008, Busso and Voigts¹ published a study showing that there are no changes in the physical proprieties of 1.3 ml of CaHA after the addition of 0.23 ml of lidocaine 2% – with or without vasoconstrictor – resulting in an lidocaine concentration of 0.3%.¹ The incorporation of lidocaine into the filler has already been used with hyaluronic acid. Additionally, the authors have demonstrated that 10 transfer movements appear to be

Surgical pearl

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enough to mix and maintain the homogeneity of the filler. The viscosity and the extrusion forces of the lidocaine/CaHA blend decrease as the volume of lidocaine increases. There is no increase in the needle jam rate. The pH and elasticity of the lidocaine/CaHA blend are essentially equivalent to those found in CaHA in its pure state. The type of connector used to blend the substances was a female-to-female Luer Lok connector, currently unavailable in Brazil (Figure 1).

TECHNIQUE

The authors present a 3-way stopcock, manufactured by Embramed in Brazil (Figure 2), as an alternative to the female-to-female Luer Lok connector employed in Busso and Voigts' study.¹

Two perpendicular ports are used in the procedure: one for the coupling of the anesthetic (0.23 ml of lidocaine 2%), and the other for the filler (1.3 ml of CaHA). Inside the connector, there is an empty space of 0.10 ml (air) that will be filled by the anesthetic. The blend is achieved using 10 cycles of alternate compressions of the plungers of the syringes. Each cycle consists of a complete compression of the syringe containing the filler, followed by the reverse movement, which results in the blend transferring to the filler syringe. The procedure includes the following steps:

1) Keep the connector's stopcock open between the two perpendicular ports .

2) Remove the cap from one of the ports and connect the syringe with 0.23 ml of lidocaine 2% .

3) Inject 0.1 ml of the anesthetic into the connector, leaving 0.13 ml in the syringe (Figure 3).

4) Remove the cap of the second perpendicular port and connect the syringe containing 1.3 ml of the filler.

5) Start compressing the plungers alternately in a fast and effective way (two compressions per second), beginning with the syringe containing the filler, until 10 complete cycles (anesthetic and filler) are achieved (Figure 4).

6) Uncouple the syringe containing the blend (anesthetic and filler), which is ready to be used.

7) Remember that there is an additional 0.1 ml of the blend remaining inside the connector that must be aspirated and used later.

CONCLUSION

The 3-way stopcock is an easy to use, efficient, and cost effective option for blending lidocaine and CaHA that is available in Brazil. ●

REFERENCES

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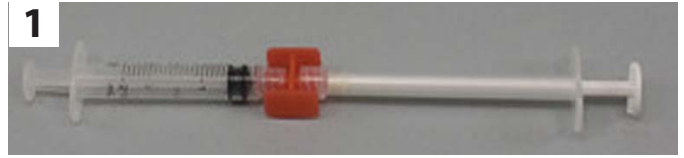


Figure 1- Coupling the syringe using the female-to-female Luer Lok connector

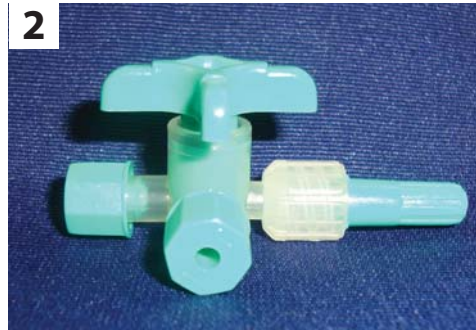


Figure 2: Embramed™ 3-way stopcock



Figure 4: Alternate compressions on the syringes' plungers

Figure 3: After injecting 0.1 ml of the anesthetic into the connector, 0.13 ml remains in the syringe