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The Fibrin Wrap Graft: Dorsal Augmentation Rhinoplasty Using Dice Cartilage Graft Wrapped with Plasma-Rich Fibrin Sheet.

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Abstract

Dorsal nasal augmentation rhinoplasty is a considerable challenge, not only because of the type of surgery but because it is performed in revisional or secondary surgeries with fibrosis in most cases. In many others, the augmentation is made in noses with structural damage of the upper lateral cartilages and framework over resection of the nasal septum, where restructuring often is insufficient in structure and support. Nevertheless, the fined diced cartilage graft plays an essential role in regularizing the nasal dorsum, increasing its volume and projection, and improving the aesthetic lines of the nose and the tip-to-dorsum relationship.

Dorsal nasal augmentation can be done using the open or closed approach. However, the closed approach in rhinoplasty generates a different dare due to decreased tissue visualization and approximation. Still, it also has an advantage: it can objectively assess the different nasal relationships in real-time.

This article intends to show a novel technique using multiple thin sheets of plasm-rich fibrin (PRF) wrapping fined diced cartilage as an alternative to the different methods currently available for nasal dorsal augmentation in primary and secondary rhinoplasty, with some potential advantages such as complete biointegration because of the autologous tissue and the intrinsic growth factors in the PRF, precise contouring, low complication rate, great enlargement of the dorsum, easily malleable intraoperatively and first eight days postoperative. These potential advantages have been preliminarily assessed; however, they require prospective studies and comparison with other techniques to assess them objectively.

Keywords : Dorsal augmentation rhinoplasty, Fined diced cartilage graft, Plasma-rich fibrin, Platelet-rich fibrin, Platelet-rich plasma.

INTRODUCTION

Nowadays, the use of technologies that facilitate the standardization of facial measurements and careful pre-surgical analysis in rhinoplasty allows the assessment that most procedures improve the nasal dorsum to some extent [1]. From the first descriptions of surgical procedures that pursue increase or regularization of the nasal dorsum, the free solid processed and morselized cartilage grafts have been the technique of choice for a long time[1]. For example, the rib graft could be custom cut and contoured for a precise dorsal augmentation, but it can be deformed and twisted with the healing of the surgery [2]. However, this type of graft is susceptible to complications, such as graft mobilization and visible and unsightly irregular edges, once the inflammation has resolved, especially in patients with thin skin, [3,4]. Therefore, alternatives to these solid cartilage grafts have appeared over time, which are used depending on the patient's and the surgeon's preferences[5].

There are three different sources for dorsal nasal

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augmentation in rhinoplasty [4]; the most frequently used are the autologous grafts, which include: cartilage, bone, Osseo cartilage, diced cartilage (DC), facia, perichondrium, and dermofat[6]. Within these autologous grafts, the nasal septum cartilage, auricular and costal cartilage are the most used due to their low resorption, lower risk of infection, greater firmness, and better aesthetic results[7]. Currently, the studies show no difference in using these different types of cartilage.[6,8]

The other alternative is the allogeneic grafts, such as the rib allograft cartilage, allograft bone, and the AlloDerm. These grafts are used more frequently in Asian countries, in patients with insufficient autologous graft[6], or those who do not wish to have morbidity in the donor site. However, allogenic grafts tend to bend and have the possibility of reabsorption over time.[7]

The third group, which is less used, are the synthetic grafts, such as silicone[9], expanded tetrafluoroethylene (ePTFE), and Medpor. The synthetic grafts allow a predictable and symmetrical increase in the dorsum with excellent rigidity, able to reestablish the L-strut. Nevertheless, they can have potential complications and morbidity, such as a foreign body reaction, mobilization, and extrusion with damage to the underlying tissues.[7]

Autogenous material is preferred for its normal consistency, flexibility, long-term survival, relative resistance to infection, and unquestionable biocompatibility.[10] The use of diced cartilage grafts in rhinoplasty surgery has been reviewed recently; Erol lately revived the use of diced cartilage grafts in rhinoplasty surgery, publishing his technique for "Turkish delight" grafts (diced cartilage grafts wrapped in Surgicel).[10,11] Due to certain complications of this technique, such as graft resorption and underlying fibrosis, the diced cartilage with deep temporalis fascia (DC-F) graft has become a popular technique for dorsal nasal reconstruction of the nasal dorsum[8,12,13]. Daniel and Calvert published the first report of diced cartilage and deep temporalis fascia grafts for radix and dorsal reconstruction.[8]

Using grafts is fundamental in modern rhinoplasty surgery for functional and aesthetic reasons. Septal and auricular cartilage are the top donor sites. However, the use of rib cartilage has significantly increased in secondary cases.[10] Regardless of the donor site, having enough cartilage to be a safe and predictable tool to correct low, deformed, or irregular nasal dorsum is crucial.[10]

As the name states, the diced cartilage (DC) grafts consist of cuts of cubes smaller than 1 mm (preferably 0.5 mm).[8] It is very versatile in primary and secondary rhinoplasty, allowing a wide range of possibilities depending on the existing deficit in the nasal dorsum: camouflaging of underlying structures, such as in patients with very thin skin, volume increasing for symmetry, or correction of low dorsum or saddle nose deformity. Diced cartilage can also be used using an injector to insert the diced cartilage in precise places through a small incision at the end of the surgery, improving the smoothness of the dorsal lines.[13]

An increasingly used option for nasal augmentation is in which autologous diced-cartilage grafts are stabilized with autologous tissue glue (ATG) created from platelet-rich plasma (platelet gel) and platelet-poor plasma (fibrin glue)[14,15]. The last one, also known as Plasma-Rich Fibrin, allows the manipulation and molding of the DC in the desired shape on the nasal dorsum. [15] In thin-skin primary rhinoplasty patients, using camouflage grafts on the tip is frequent[4]. This can be reached via fine-diced cartilage (FDC) and the previously mentioned injectors in small amounts (less than 0.5 cc). Furthermore, in patients with an ethnic or non-Caucasian nose, increasing the radix volume to 1 or 2 mm and using the FDC in its different forms allows accurate results over a long time. [13] Moreover, FDC is an alternative for irregularity in the dorsal aesthetic lines or asymmetry of the nasal dorsum.[16] On the other hand, in revisional rhinoplasty, the challenge is more significant due to many factors from the previous surgeries, such as decreased skin elasticity, fibrosis, cartilage pointing, irregularities and dorsum asymmetries, saddle nose, inverted V deformity, among others[12,16]. Structural grafts are required in these cases, and the surgeon needs to increase the volume of the nasal dorsum using fined diced cartilage wrapped in fascia or fibrin-rich plasma sheets, as proposed in this article.

WAYS TO MAKE AND APPLY DC GRAFT IN RHINOPLASTY

Diced Cartilage

Diced cartilage (DC) can be placed in the nose without wrapping material[17,18]. The technique is to fill 1-mm diameter diced cartilage syringes[19] with the DC[17]. The cartilage must be diced into cubes smaller than 1 mm on the edge and preferably 0.5 mm on the edge.[8,18] The plunger is inserted to compact the cartilage as much as possible. The injector facilitates the direct placement of the cartilage along the nasal dorsum, in the glabellar, radix area, or along the pyriform aperture[7,17]. However, diced cartilage grafts have two theoretical problems[17]: anomalous dispersion and palpability/visibility with absorption.[14,20,21]

Diced Cartilage Wrapped in Surgicel

"Turkish delight" graft consists of diced cartilage wrapped in Surgicel (Johnson & Johnson, Somerville, N.J.) and then inserted throughout the nose.[17] The technique followed Erol's guidelines meticulously and without modification. First, the excised cartilage is diced into 0.5- to 1-mm pieces using a no. 11 blade[10,11], and 1 cc of blood is added to the diced cartilage

for consistency. After, the cartilage is wrapped in Surgicel to achieve the desired shape with slight overcorrection[10], and it is finally placed into the nose under direct vision with care to maintain the integrity of the graft[10,11].

Diced Cartilage Grafts Wrapped in Fascia

Wrapping the DC is an alternative to Surgicel. Using temporal fascia or the recti abdominis fascia,[22–25] allows placing the diced cartilage safely and stably with autologous tissue (fascia).[25,26] This graft is positioned on the dorsum and ideally fixed with absorbable sutures externalized through the nose[26,27] avoiding the graft's mobility and allowing stability over time. [12,24]

The basic technique consists of the following steps: First, all grafts are kept in dilute bacitracin antibiotic solution[13,17], then the cartilage is diced, and the fascia is sutured with absorbable suture surrounding a syringe creating a tube pocket. This fascia bag is then filled with the diced cartilage, and finally, the end of the fascia where the syringe entered is sutured to avoid graft dispersion.[5,6,8,12,27]

Sandwich of perichondrium and fascia (SPF) or the sandwich of perichondrium, rib lamination, and fascia (SPLF)

Both techniques, described by Robotti, are a hybrid construct pretending to do the proper height of the dorsum contour without irregularities in relation to the nasal tip[28]. Perichondrium, rib lamination, and rectus fascia are the three ingredients required; perichondrium is peeled off by an elevator, and multiple laminations of rib segments measuring 1 to 3 mm thick are made using hair transplant blades[28].

SPF: the perichondrium will function as a relatively thick basal layer of appropriate consistency, positioned with its underlying surface (previously in contact with native rib) on the dorsum[28]. It will cover as a single unit the new dorsal plateau and a portion of bone cephalically reshaped by piezo or burr[28]. The fascia is sutured on top with a running 5-0 Vicryl Rapide (Ethicon, Inc., Somerville, N.J.). Two sutures are left long at each side of the cephalic end of the graft[28].

SPLF: the same construct progresses with the rib lamina inserted into its exact pocket. The fit should be precise without redundancy[28]. In both combinations, the caudal end is left open[28]. Insertion and suturing are performed once tip work has been completed. Accurate stabilization is essential because developing a subperiosteal tight pocket is sometimes impossible. Dorsal aesthetic lines are reestablished by suturing the residual upper lateral cartilages to the soft edges of the graft[28].

Diced cartilage solidified by tissue sealant (The Tasman technique)

In this technique, A modified 3-mL syringe is used to serve as a template where the diced cartilage is placed. In order to modify the syringe, the syringe is cut diagonally along its long axis to create a slop measuring approximately 1 cm wide and 3 to 4 cm long. After placing the cartilage in the syringe template, the DC is solidified using a few drops of human tissue sealant. This creates a sufficiently rigid graft to transfer from its plastic mold to the nasal dorsum[2]. This technique can be used in patients who require dorsum augmentation greater than 3 mm[29].

In this technique, the human tissue sealant agent used to prepare de DC must be a 2-mL pack-age of Evicel (Omrix Biopharmaceuticals Ltd), the preferred solidifying agent. It comes as a single-use kit consisting of 2 vials:[2] one vial contains Thrombin, which is made of a sterile solution containing highly purified human Thrombin and calcium chloride. The other vial contains Biological Active Component 2 (BAC2), which consists mainly of a concentrate of human fibrinogen[2,29].

Each vial is transferred to an individual 3-mL syringe. The syringe is attached to a 21-gauge needle. Two or three drops of Thrombin are first applied to the trough, then the DC is added. If the cartilage is too saturated with the Thrombin, the cartilage is held in place with a freer elevator while tilting the trough slightly to drain off excess Thrombin[2]. The cartilage is then compacted and molded into the desired shape with a freer elevator. Then, 2 or 3 drops of fibrinogen (BAC2) are distributed over the entire surface of the DC. The quantity of fibrinogen should be just enough to fill the spaces between the fragmented cartilage, and once ready, it is gently massaged into the cartilage with a freer elevator. The fibrinogen rapidly diffuses through the pieces of cartilage to react with the Thrombin. Within 3 to 5 minutes, the DC is solidified into a semirigid graft and can be sized and shaped according to the need. [2,29]

In the following box (**table 1**), a description of the advantages and disadvantages of different ways to do dorsal augmentation is shown. Including the novel approach proposed in this article, also named "The Fibrin Wrap Graft."

Table 1. Advantages and Disadvantages of Different Autologous Techniques of Dorsal Augmentation Rhinoplasty.

Technique	Advantages	Disadvantages
Concha auricular graft (Pieces)	• Easy harvested donor site. • Great capacity to increase the nasal dorsum.	• Fixation difficulties. • Visible over time. • Intrinsic warping shape. • Potential donor-site morbidity.
Block rip cartilage graft	• Extensively available. • Strong structural support. • Highest capacity to increase the nasal dorsum.	• Donor site morbidity area. • Edges are easily seen. • Progressive calcification. • Block mobility by the patient.
Slides rip cartilage graft	• Highest capacity to increase the nasal dorsum.	• Donor-site morbidity. • High potential warping. • More challenging to alienate. • Most of the time requires temporal external fixation.
Diced Cartilage	• Precise enlargement and contouring in the nasal dorsum. • Malleable (first eight days).	• Minimal increase of the nasal dorsum. • Less structural support.
Diced Cartilage Wrapped in Surgicel	• Great enlargement of the dorsum index.	• Less predictectible enlargement. • Underlying fibrosis. • High resorption rate • High infection rate.
Diced Cartilage Grafts Wrapped in Fascia	• Great capability to improve the nasal dorsum volume. • Malleable (first eight days).	• Moderate resorption rate. • Moderate predictable enlargement.
SPF - SPLF	• Precise contouring. • Great camouflage. • Low complication rate.	• Posible underaugmentation.
Diced cartilage solidified by tissue sealant	• Biointegration • Precise contouring • Higher volume increase possibility	• High cost.
"Fibrin wrap graft"	Potential advantages: • Complete biointegration because of the autologous tissue and the intrinsic grow factors. • Precise contouring. • Low complication rate. • Higher volume increase possibility. • Easily malleable intraoperatively. • Malleable (first eight days post operative). **More investigations and follow up cases are necessary.*	• Requires a learning curve to obtain the fibrin sheet and clots. • Slight increase of time in surgery.

NOVEL APPROACH: Diced Cartilage Graft Wrapped with Plasma-Rich Fibrin Sheet

Video 1: Supplemental Digital Content demonstrates all techniques: harvesting and dicing the auricular conchal cartilage (DC), the process to obtain Plasma-Rich Fibrin (PRF), fibrin clot, fibrin hydrogel, and the DC wrapped with PRF sheet.

Patient Selection

- Very low radix.
- Low dorsum in platyrrhine nose patients.
- Over-resected nasal dorsum in previous rhinoplasty.
- Inverted-V deformity.
- Saddle nose deformity.
- Agenesis of the nasal bones.

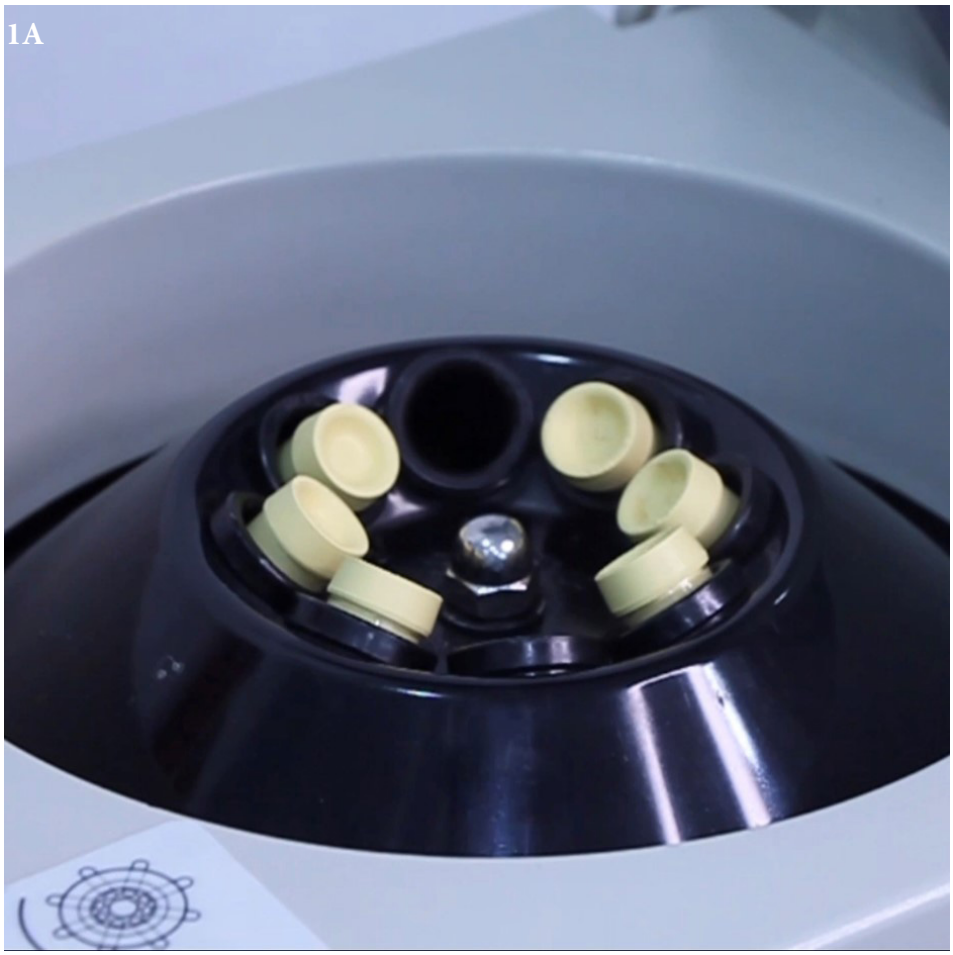
Materials to make Plasma-Rich fibrin

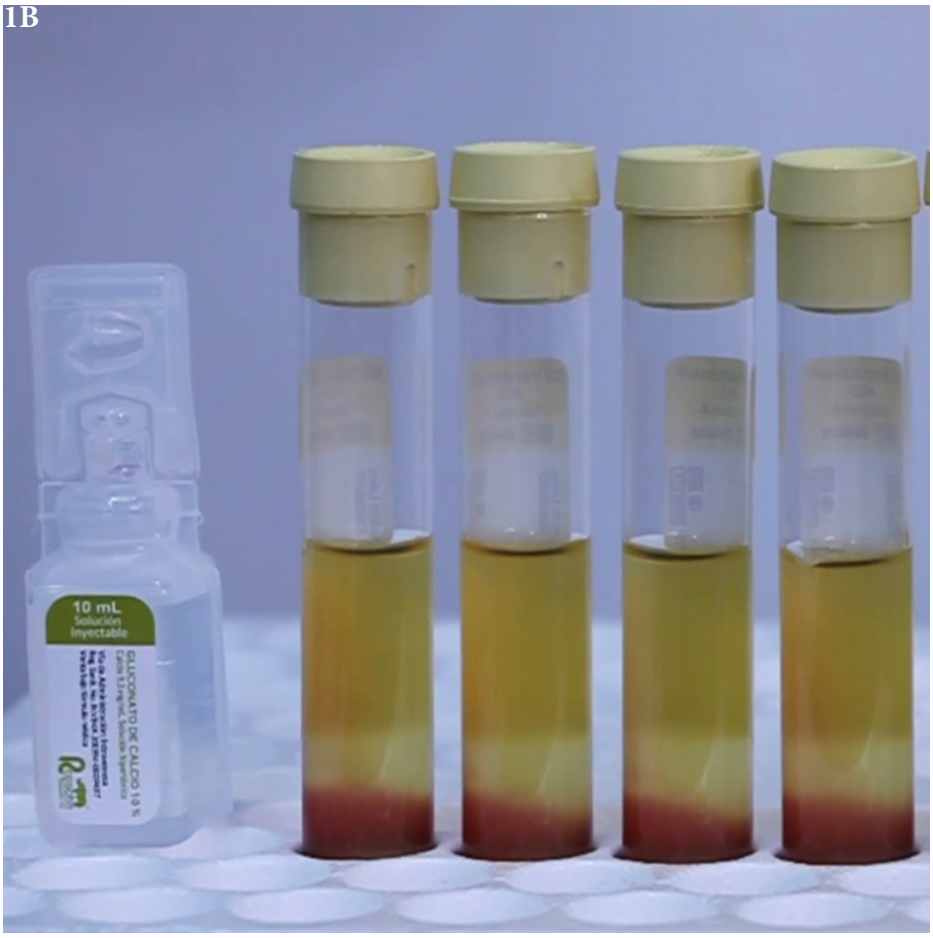
- 4 red serum separation tubes.
- 8 sample tubes 8,5 ml ACD with yellow separating gel (1.5 ml of anticoagulant Acid citrate Dextrose Solution).
- 2 syringes of 3 ml
- 3 syringes of 5 ml
- 2 syringes of 10 ml
- 2 vials of 10% calcium gluconate
- 2 Petri dishes
- 1 extraction needle

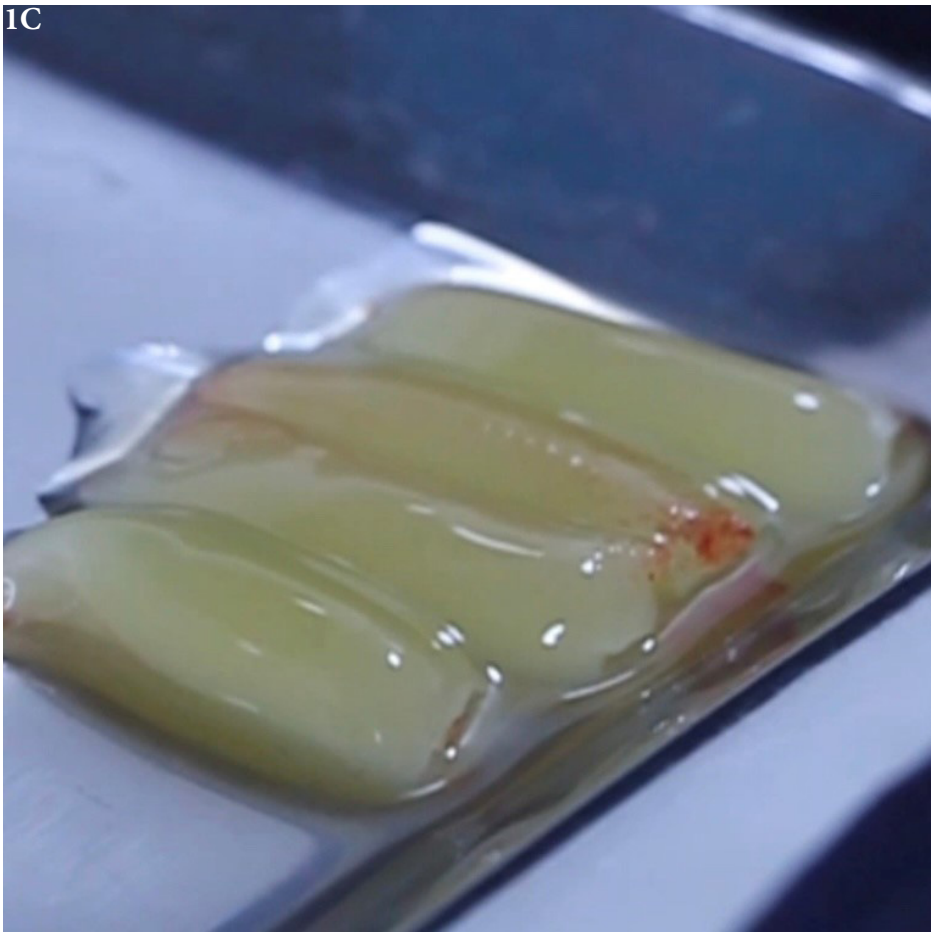
Technique

1. In this case, the procedure starts by harvesting cartilage from the cymba and cavum ear concha cartilage. In addition, harvesting from costal cartilage or the nasal septum is also possible. The selection site depends on the availability and the surgical plan.
2. Then, an average of 50 ml of blood is needed to be extracted from the patient and divided into ten sterile tubes with approximately 5 cm of blood in each one: 4 red serum separation tubes without anticoagulant and six samples tubes of 8,5 ml with ACD (1.5 ml of anticoagulant acid citrate and dextrose Solution).
3. The test tubes are then placed in a standard centrifuge to undergo centrifugation for 8 minutes at 2500 rpm (revolutions per minute). After centrifugation, the operator extracts the PRF (platelet-rich fibrin) at the top of the tube. The portion closest to the precipitate is the plasm-rich platelets (PRP), leaving the hematocrit behind in the test tube. **Figure. 1**
4. The fibrin clot is obtained and removed from the previously centrifuged red tubes with dissected forceps. The excess red blood is cut off and separated in a sterile surgical container. Progressively, the four clots slightly decrease in volume. The function of the fibrin clot is not to provide volume but rather to act as an inferior and superior scaffold or support to the cartilage graft. **Figure. 1**

Figure 1. Intraoperative view of A) centrifugation for 8 minutes at 2500 rpm. B) PRF (platelet-rich fibrin) on top of the tube. The portion closest to the precipitate is the plasm-rich platelets (PRP). C-D) The fibrin clot.




1B
10 mL
Solución
Inyectable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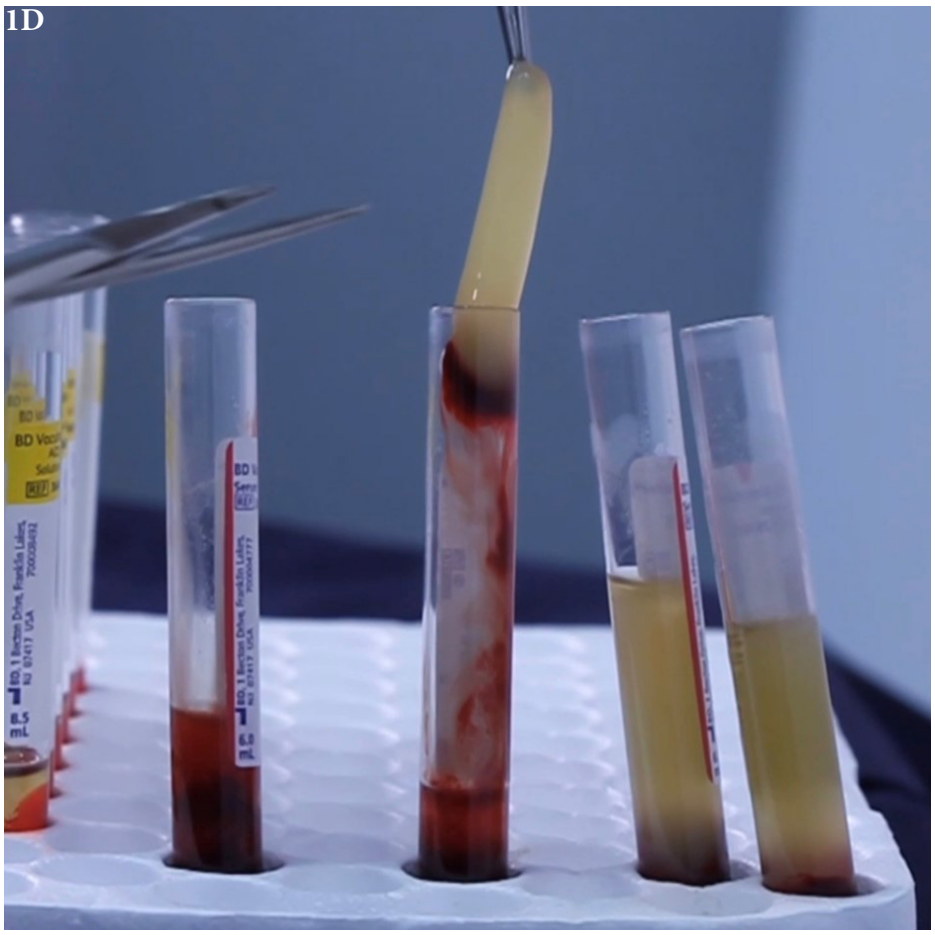
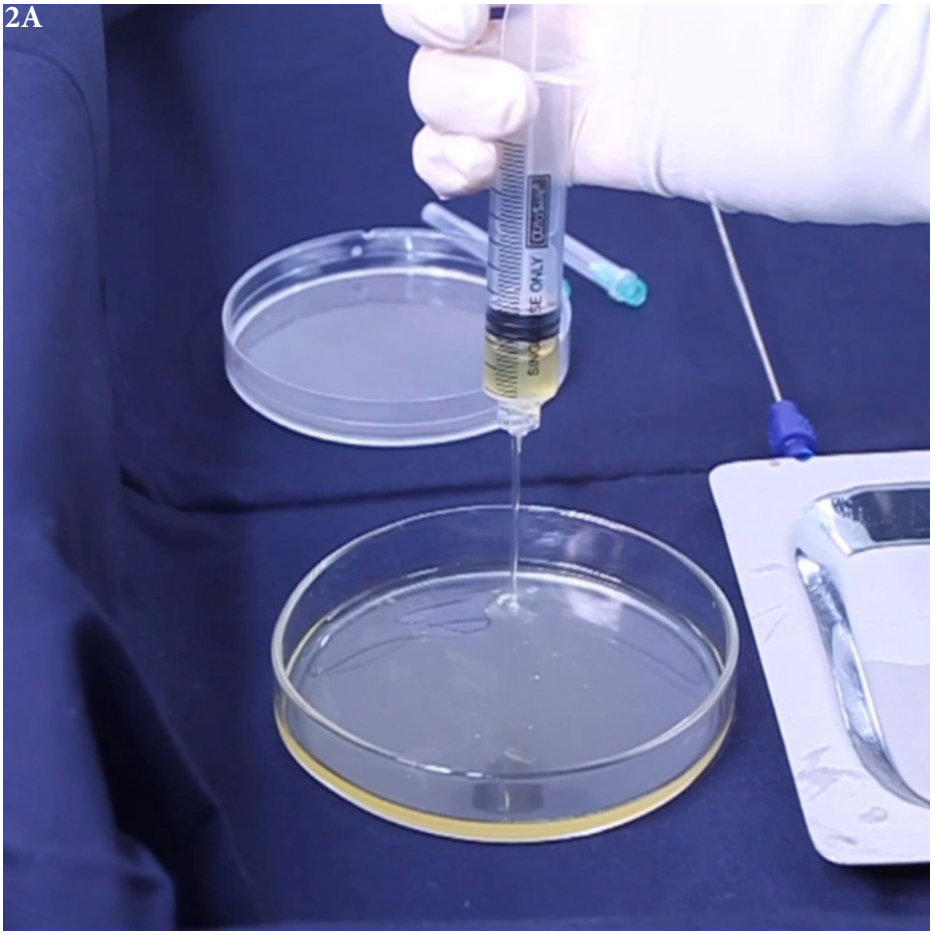
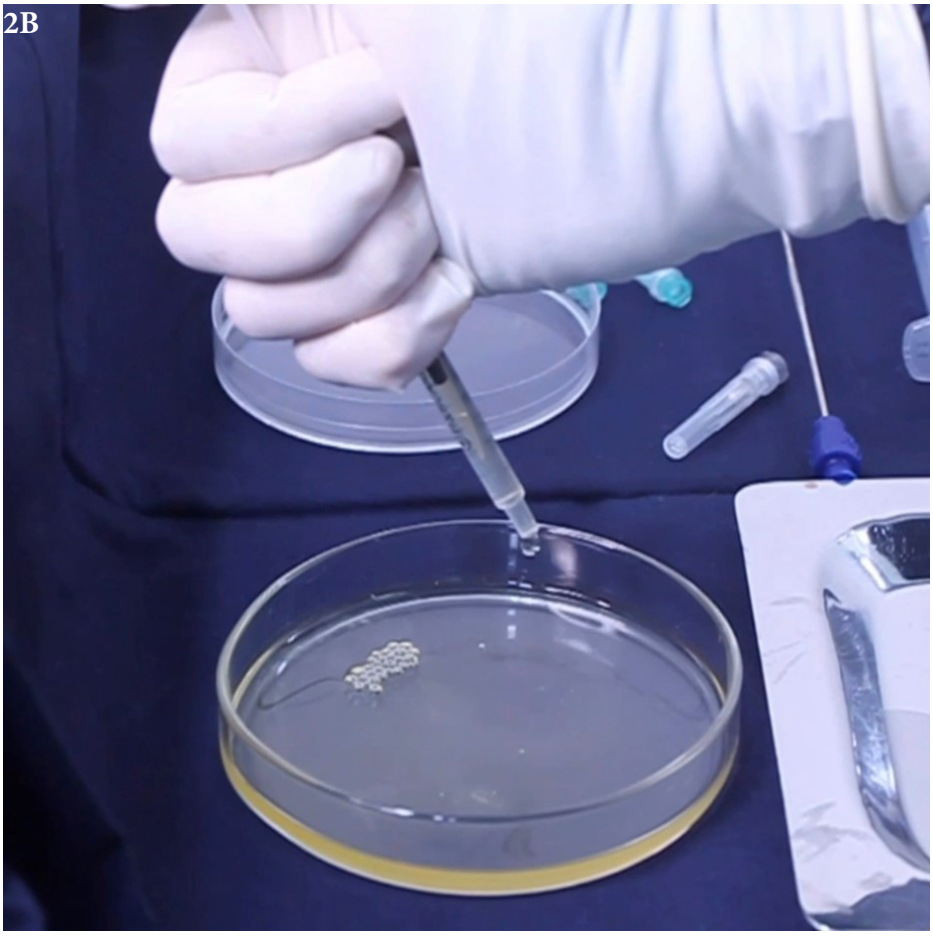
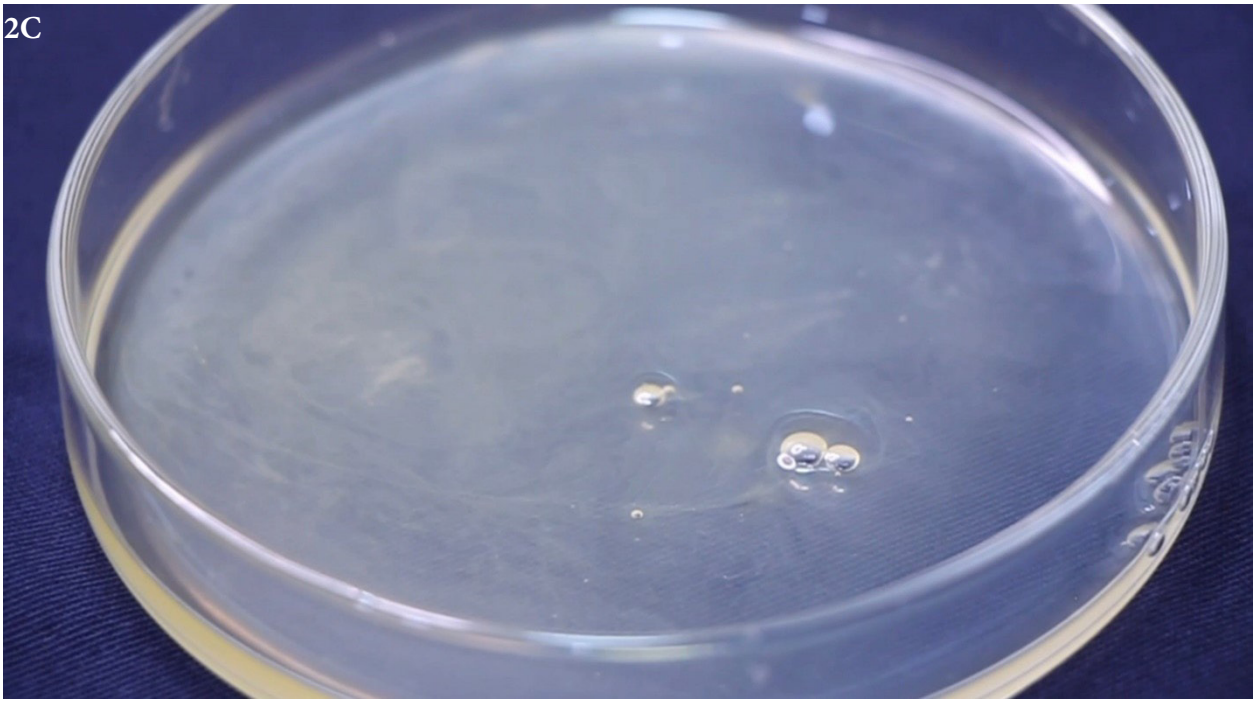


5. On the petri dish, the fibrin mesh (type of hydrogel) is formed by adding 10% calcium gluconate in a 1:10 ratio to platelet-rich plasma (PRP). The coagulation cascade is dependent on calcium, and this does not occur due to the anticoagulant in yellow tubes, which acts as a chelator for calcium ions. For this reason, adding calcium to the PRP allows the execution of the coagulation cascade through its three pathways: intrinsic, extrinsic, and common pathway, where the coagulation factors are activated sequentially to produce the polymerization of fibrinogen to form the three-dimensional network of fibrin and give the PRP a gelled structure, in addition to activating platelets, causing them to release the content of their granules as cytokines and growth factors.[30–32] **Figure. 2**

Figure 2. Intraoperative view of A) Plasm Rich Fibrine placed in a Petri dish. B) 10% calcium gluconate in a 1:10 ratio to plasma-rich fibrin. C) Formation of Plasma-Rich Fibrin Sheet.

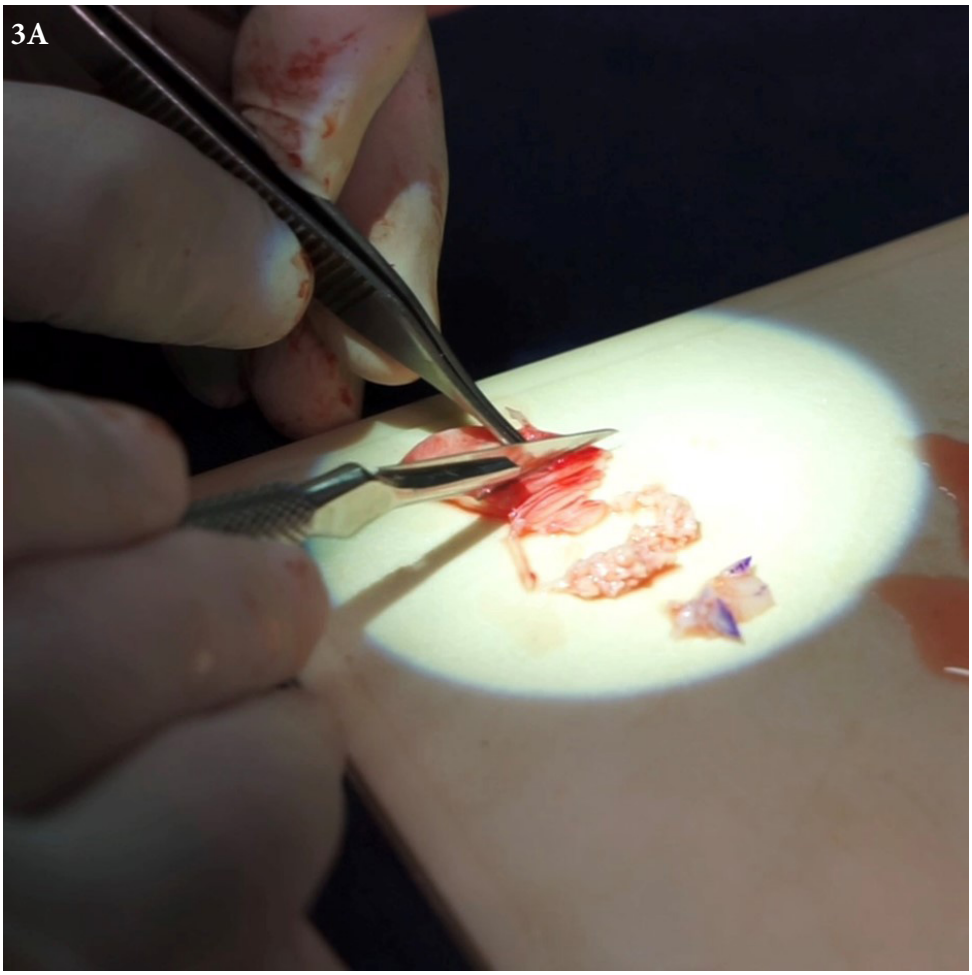


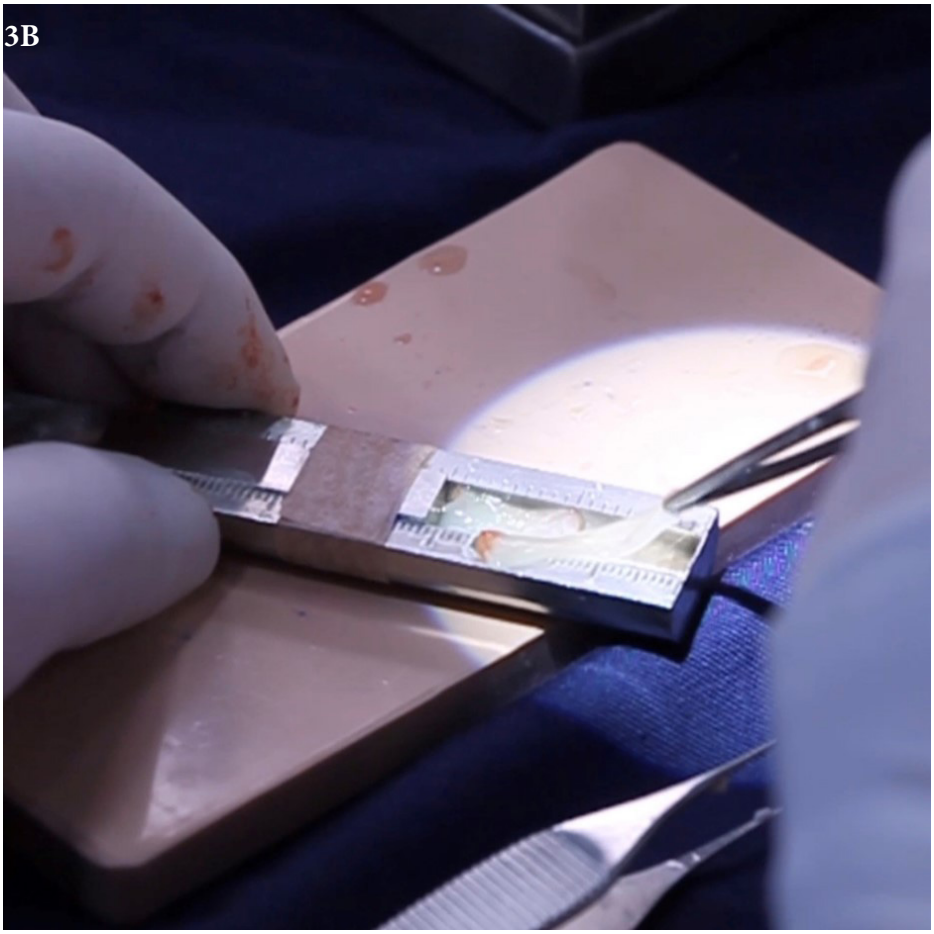




6. On a worktable, concha ear cartilage is cut into small pieces, using a no. 11 blade and dermatome blade until obtaining pieces less than 1 mm, mixed progressively with saline solution, PRP, and PRF. **Figure. 3**

Figure 3. A-C) Fine diced cartilage (FDC) less than 1 mm. B-D) Fibrin clots are placed under and over the FDC, on a semi-cylindrical metal container. E) Moist the graft with 1 ml of PRF.

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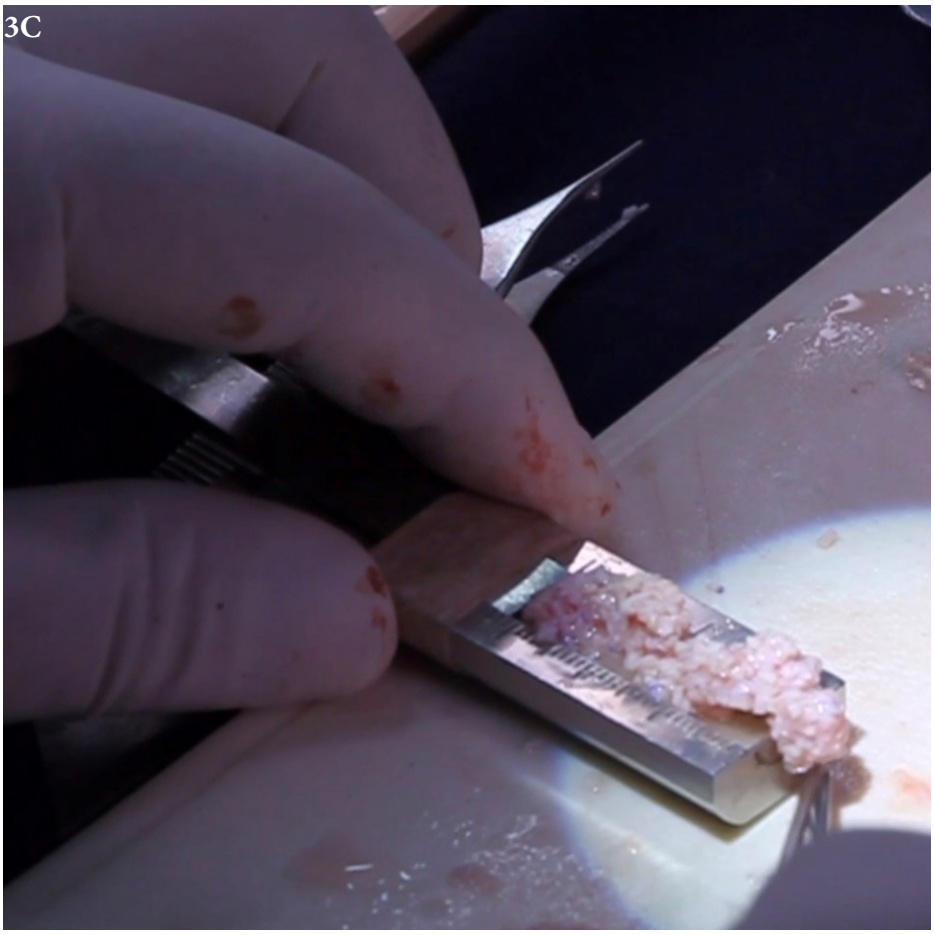
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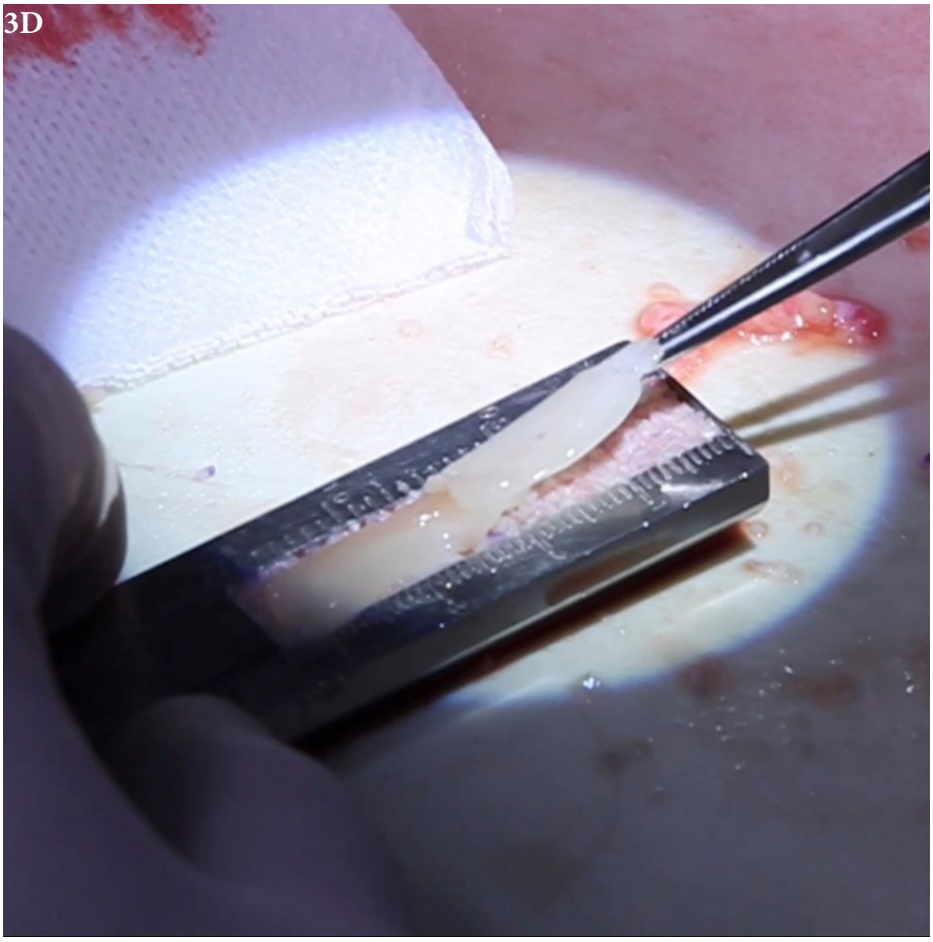
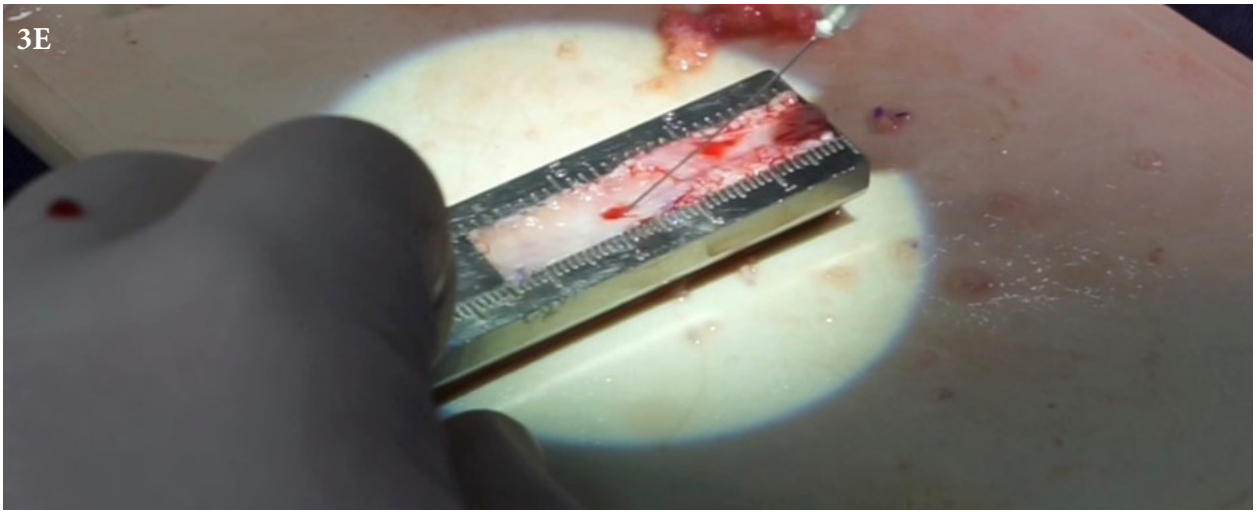
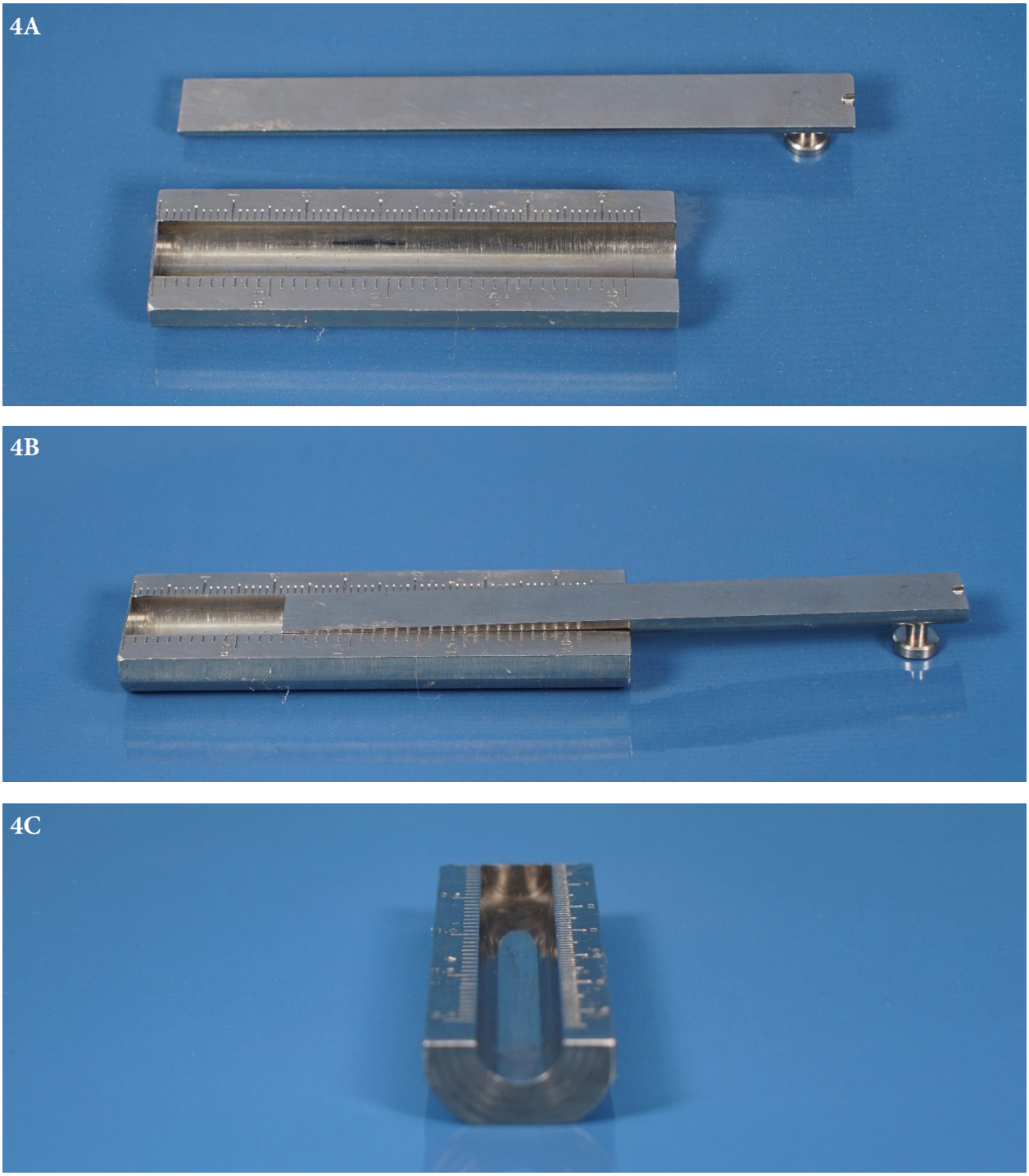




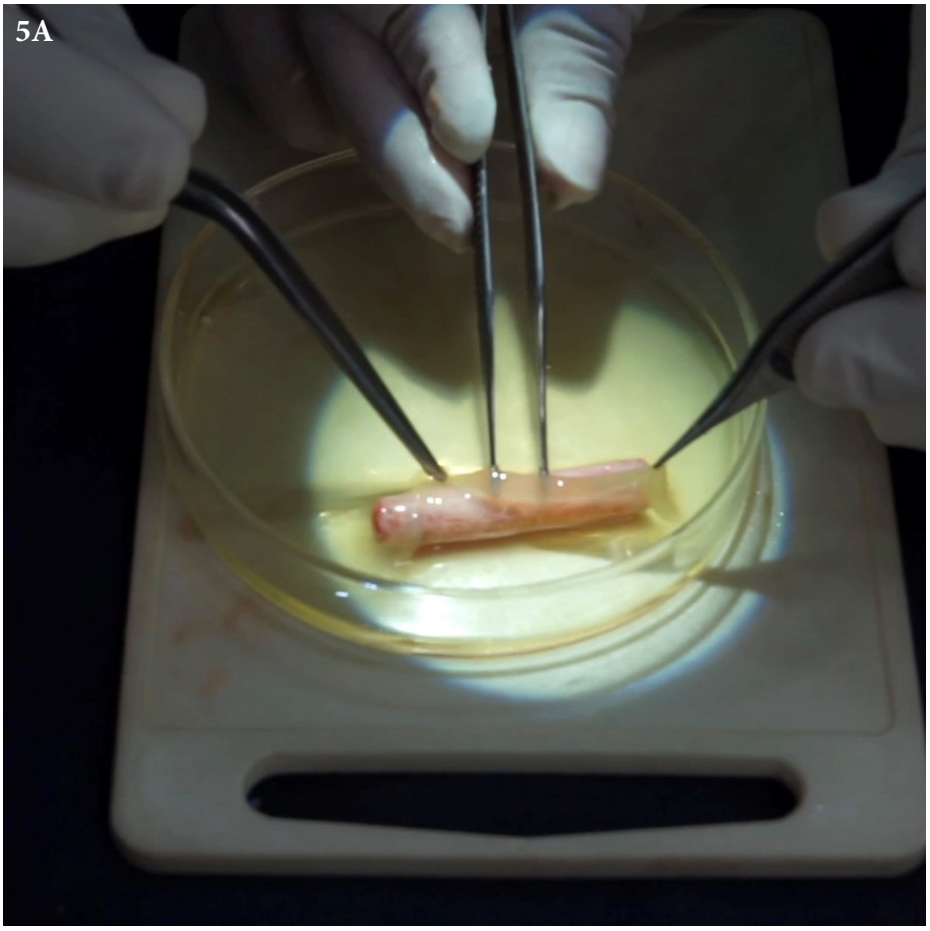
The senior author developed a semi-cylindrical surgical steel device. The measurements are 7 cm long and 2 cm wide, with a 10 mm wide and 5 mm deep concavity. It is marked in millimeters the length and the needed volume cartilage mark. **Figure 4**

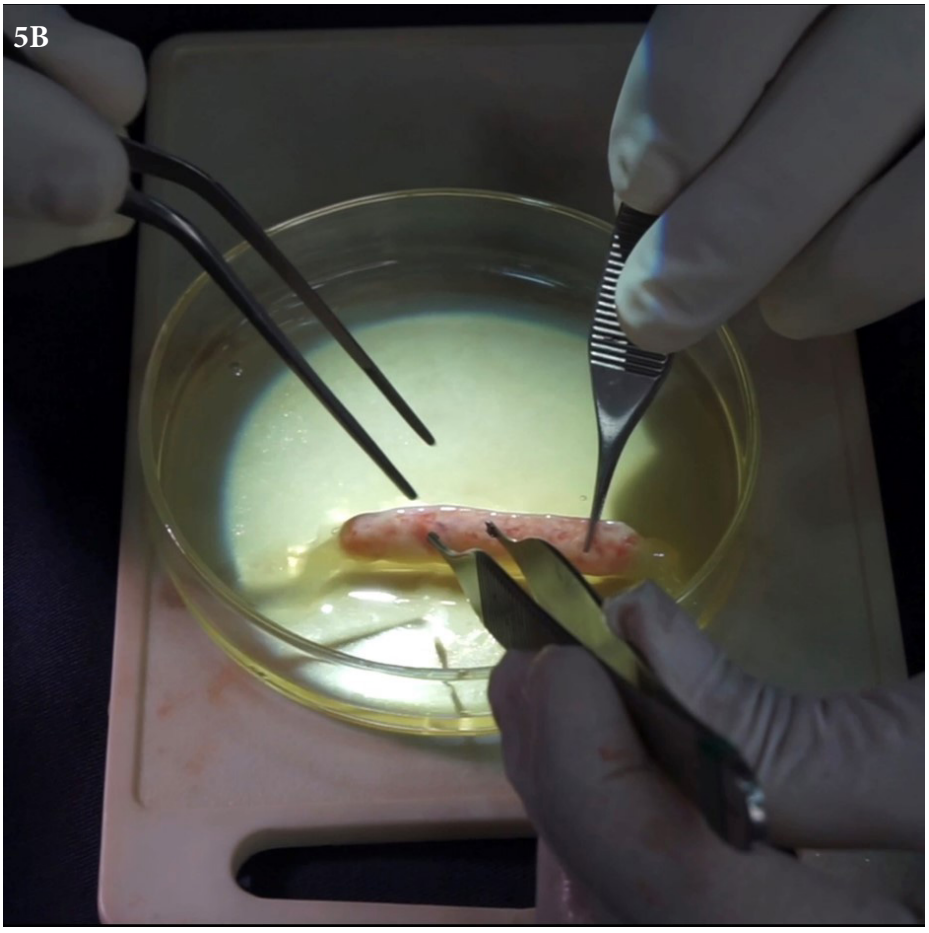
Figure 4. Semi-cylindrical surgical steel mold A) Superior View, B) Oblique view, C) Lateral View.

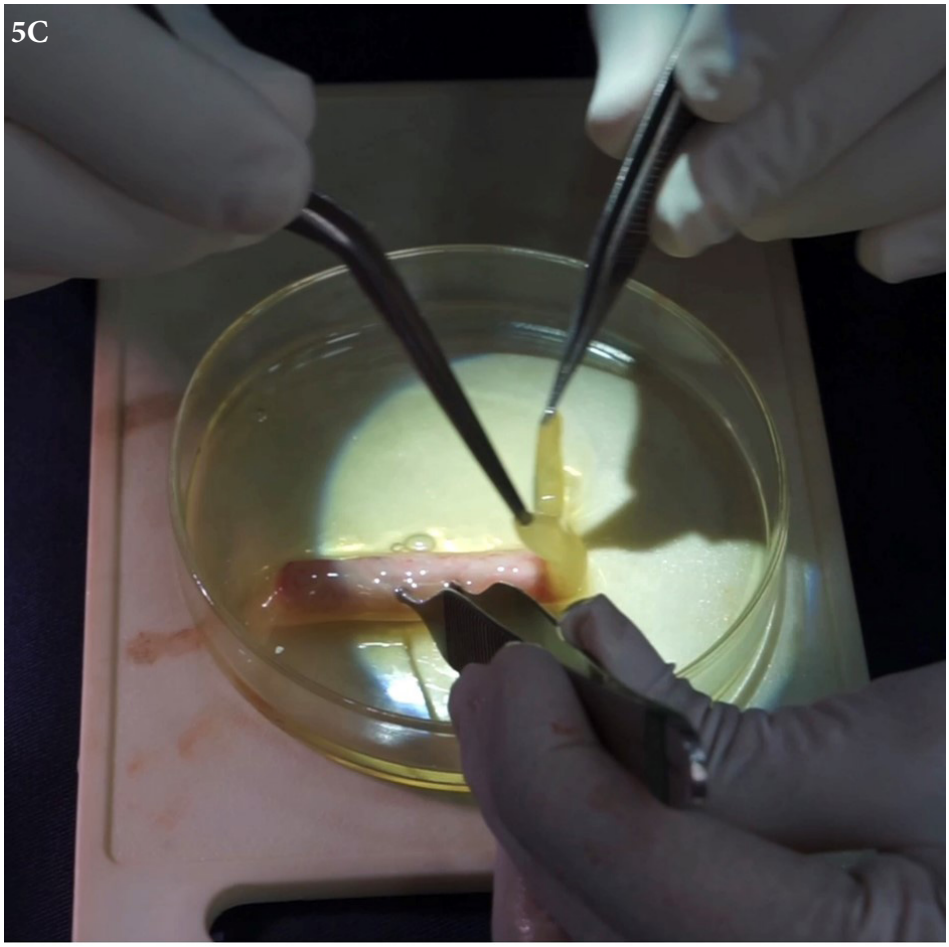


7. Two pieces of a fibrin clot are placed on a semi-cylindrical metal container whose measurements are: 1 cm wide and 5 cm long, depending on the case. Then, FDC (fine-diced cartilage) is placed, followed by two other pieces of a fibrin clot to increase the frame and support of FDC, and then is moistened with 1 to 2 ml of the same fibrin-rich plasma, giving it consistency. The excess plasma is removed with pressure gazes to avoid increasing the graft volume. Figure. 3
8. Now that the FDC has some structure, it is taken from the metal container with a perfect measurement in longitude, width, height, and volume, previously calculated from de dorsal augmentation in each patient's cases. This is placed over the fibrin hydrogel sheet previously made in a petri dish, approximately 3 ml of plasma, and instilled with 0,3 ml of 10% calcium gluconate, making a thin glue layer of malleable fibrin-rich plasma. The most crucial step is to make a correct wrap, turning over the sheet slowly and grafting gently. The excess liquid residue is absorbed by sterile gauze, making the PRF wrap very thin, consistent, and firm. This wrapping over the fibrin hydrogel sheet is repeated twice to obtain more structure and stiffness in the "wrap graft ."**Figure. 5**

Figure 5. A-B-C-D) FDC wrapped in a Plasm-rich fibrin sheet. F) Excess liquid residue absorbed by sterile gauze. G) Final result of graft, flexible, strong, and malleable.



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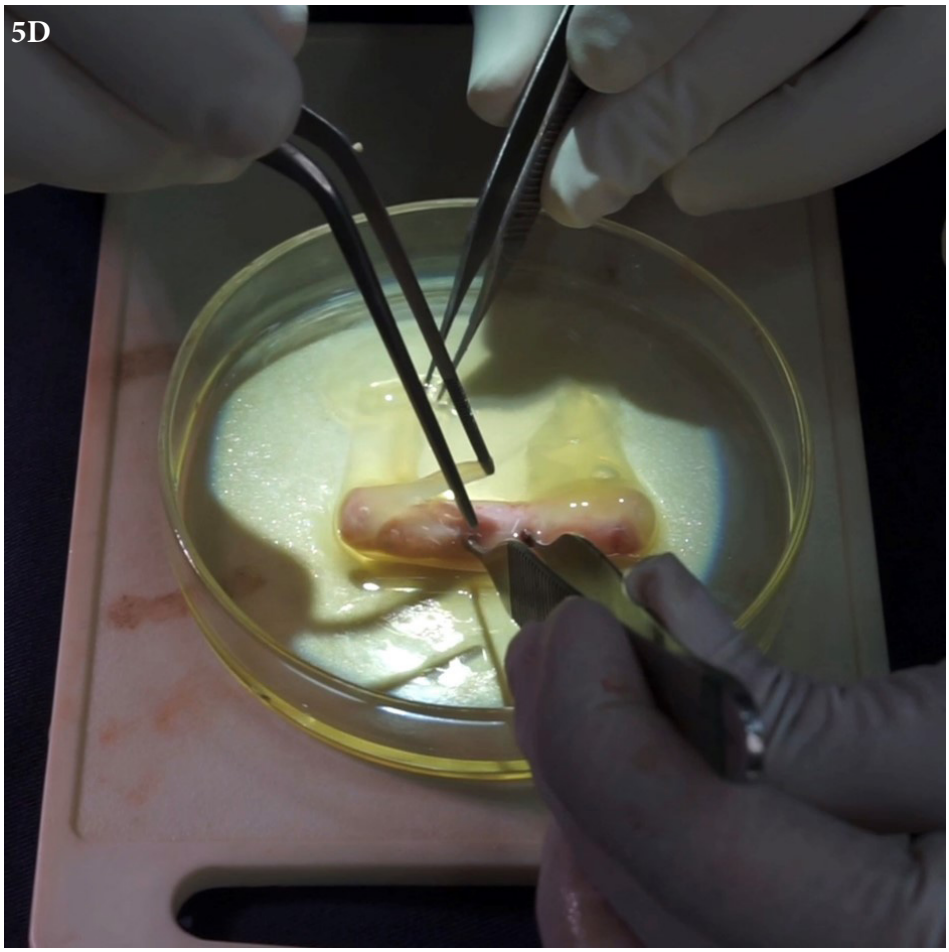
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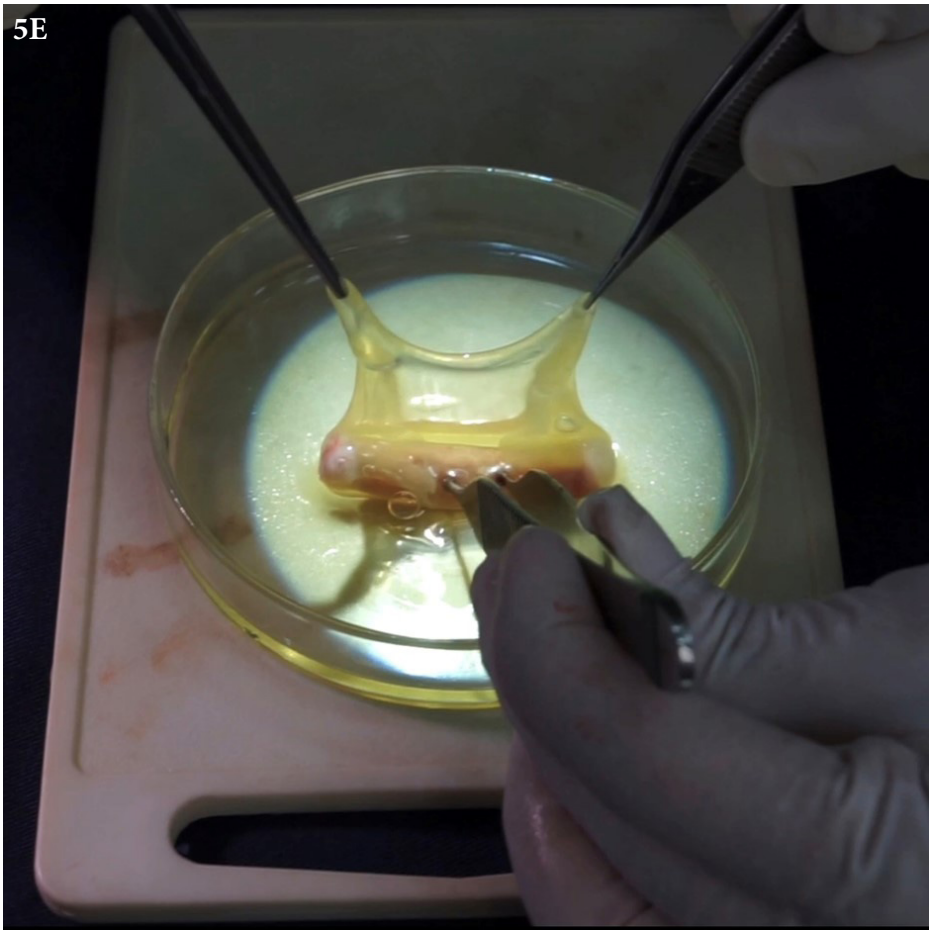
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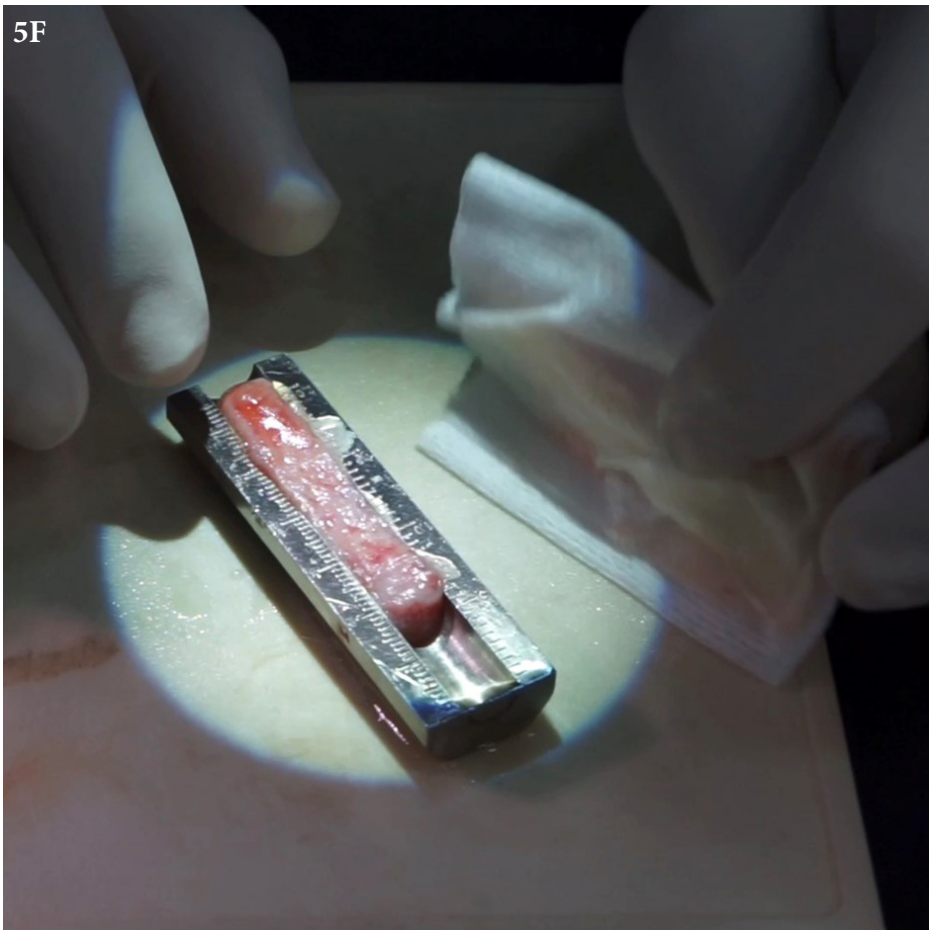
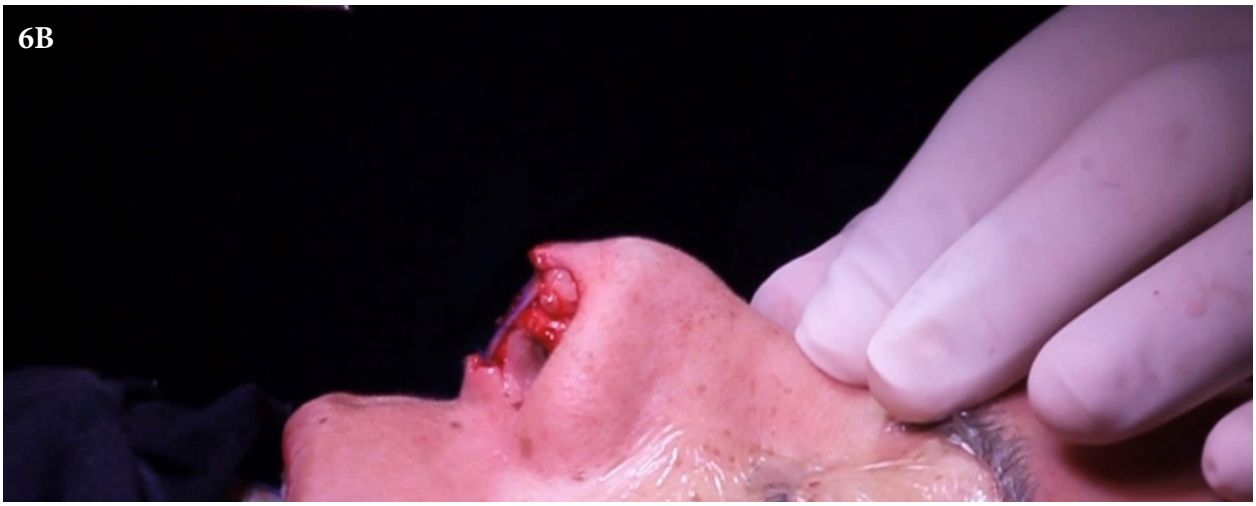

5F

9. The “Fibrin wrap graft” (fined diced cartilage wrapped in hydrogel fibrin) is gently inserted on the dorsum from the glabellar region until the supra tip. The graft can be shaped until obtaining the desired height and width. **Figure. 6**

Figure 6. A-B) Intraoperative view of dorsal nasal insertion on the “Fibrin wrap graft” in dorsal augmentation rhinoplasty.



DISCUSSION

There are multiple ways to improve a nasal dorsum with irregularities, absence of dorsal aesthetic lines, inverted-V deformity, or saddle nose deformity. However, it is essential to remember that the graft's survival could be maximized by an absence of bruising, not crushing the cartilage, and increased cartilage surface area for imbibition[7,8,17]. Diced grafts are generally not visible when placed beneath thin skin due to their size and the wrapping in the fascia.[17,25] Autografts taken from the nasal septum, the auricular concha, and the ribs are the first choices, and in the literature, there are no differences between them when they are diced in fine pieces[2–4,6,19,27,33]. Although morselized or block grafts are helpful, the DC wrapped in plasm-rich fibrin sheet is a more versatile, flexible, malleable, and predictable alternative that avoids visible secondary irregularities and reduces the risk of graft lateralization or mobilization over time. [13,14]

Besides, histologic analysis indicates that Surgicel fibers are still present at the recipient site up to 6 months post-procedure and can induce a foreign body reaction, which is the leading cause of cartilage absorption[17]. Biopsy specimens from the DC grafts wrapped in Surgicel showed evidence of fibrosis and lymphocytic infiltrates with small amounts of Surgicel visible on birefringent microscopy. Cartilage remnants were present but were metabolically inactive based on negative glial fibrillary acidic protein staining.[17] In contrast, the DC grafts wrapped in fascia showed coalescence into a single cartilage mass with viable cartilage cells and normal metabolic activity.[17]

It is important to highlight the versatility of using the DC wrap in a fibrin-rich plasma sheet to correct minor defects, such as a low radix in primary rhinoplasty. However, the most demonstrative use in immediate post-operatory secondary rhinoplasty, as exemplified in **Figure 7**, is for reconstructing the entire nasal dorsum. **Figure 8** is possibly seen as a total reconstruction of the dorsum in a matter of four months after a quaternary rhinoplasty. **Figures 9 and 10** show a huge reconstruction of the nasal dorsum, 14 and 18 months postoperative respectively, this being a medium and long-term follow-up in which the viability of the graft can be assessed. The possibility of shortening the graft or modifying its height, width, and length simply makes it a graft that must be considered within the multiple existing options to reconstruct the cartilaginous dorsum.

Figure 7. A) Right lateral view preoperative low osseocartilaginous nasal dorsum B-C) The fibrin wrap graft (FDC with PRF sheet) over the nasal dorsum. D) Immediate post-operative reconstruction of the volume of the entire dorsum.

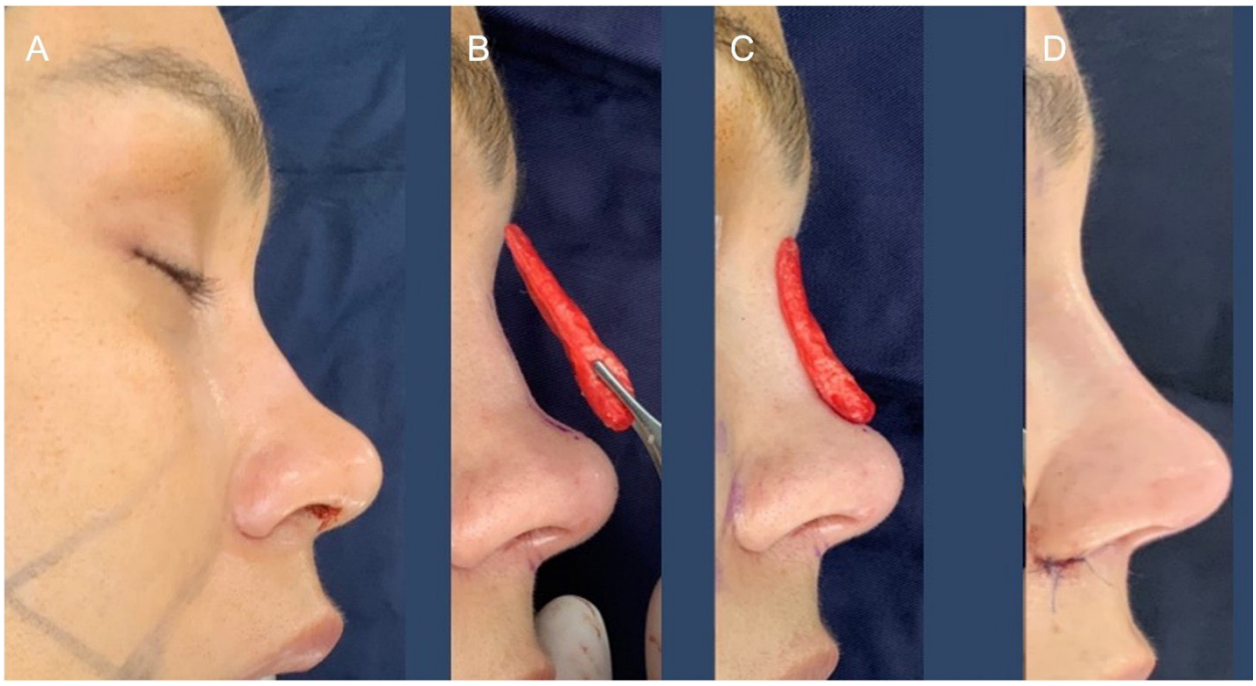


Figure 8. A) Pre-operative right lateral view B) 4 months post-operative increase volume of total nasal dorsum by grafting with DC wrapped in a PRF sheet. C) Amplified preoperative lateral view D) Pre- and post-operative amplified comparison in transparency with the right lateral view, making it possible to assess the increase in the nasal dorsum comparatively. E) Amplified post-operative lateral view.

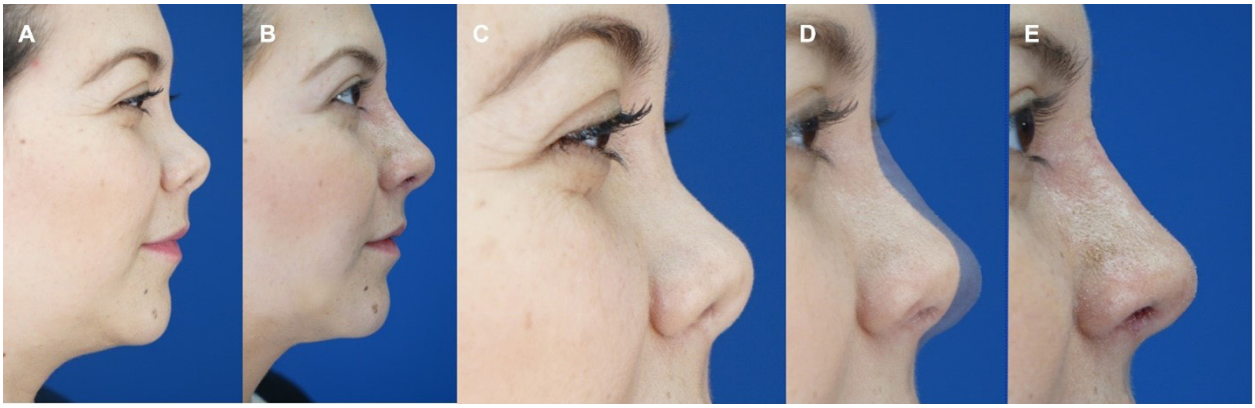


Figure 9. A) Pre-operative right lateral view B) 14 months post-operative increase volume of total nasal dorsum by grafting with DC wrapped in a PRF sheet. C) Frontal view of pre-operative view. D) Frontal view of post-operative view. E) Amplified preoperative lateral view F) Pre- and post-operative amplified comparison in transparency of the right lateral view, making it possible to assess the increase in the nasal dorsum comparatively. G) Amplified post-operative lateral view.

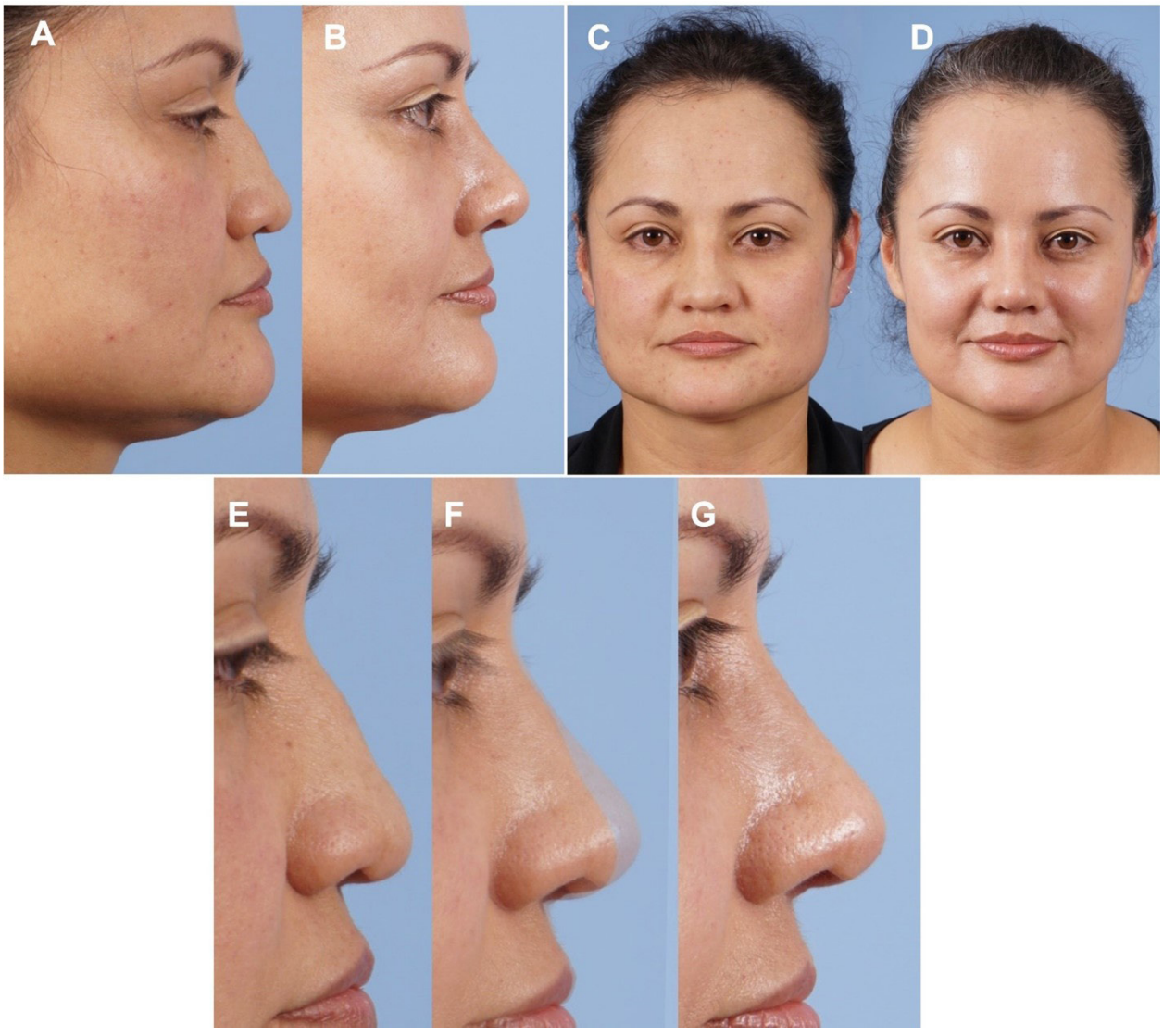
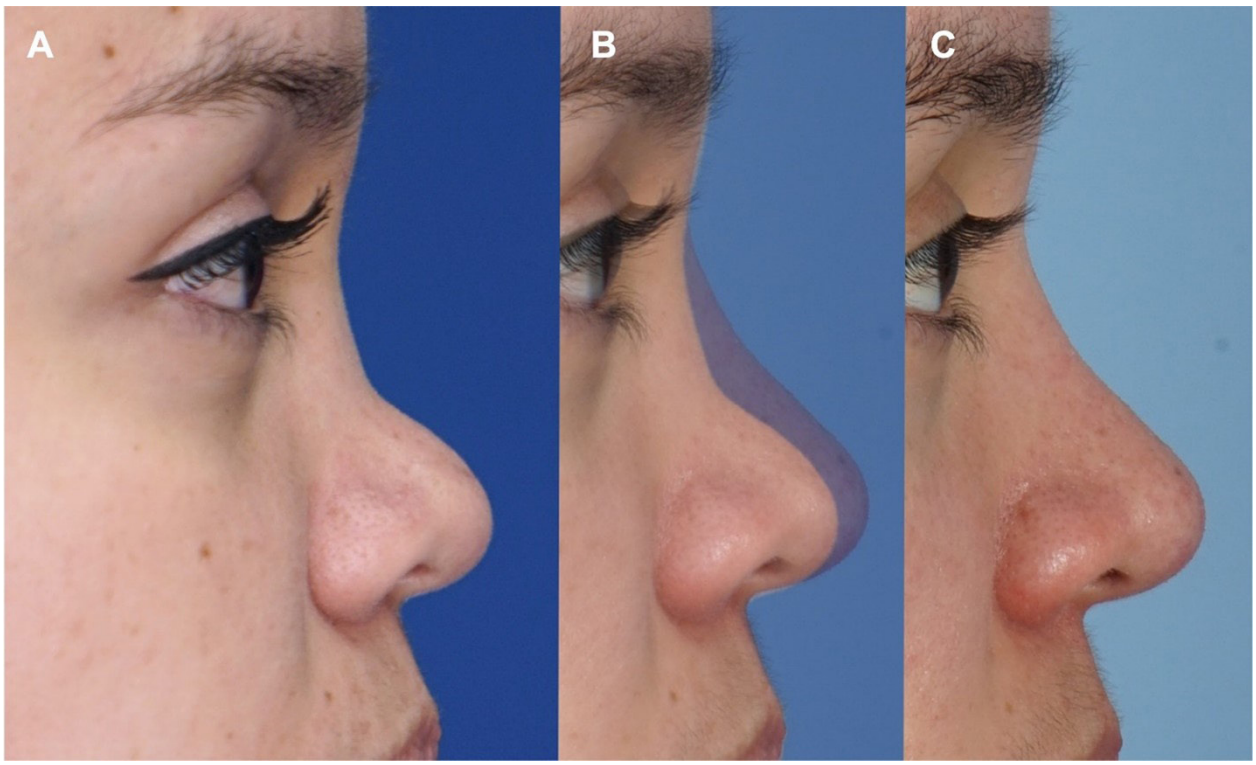


Figure 10. A) Pre-operative saddle nose deformity right lateral view B) Pre- and post-operative amplified comparison in transparency of the right lateral view, making it possible to assess the increase in the nasal dorsum comparatively C) 18 months post-operative increased volume of the entire nasal dorsum by grafting with DC wrapped in a PRF sheet.



Like all types of grafts, the DC graft, with or without Plasm-rich fibrin, has certain complications that derive from its preparation, manipulation, and acceptance by the nose tissues[3]. Although it is a rare complication, an infection can happen and must be treated early with oral antibiotics[34]. In order to decrease the rate of resorption, it is important to avoid morcellating the cartilage, preferably doing the fined dice cartilage with sharp scalpel blades.

Another complication is malposition or graft displacement, which can be managed with complementary surgery. In addition, there is also the possibility of over-augmentation or under-augmentation, for which additional interventions might be needed. For example, in cases with a deficit in the dorsum, the use of hyaluronic acid fillers can be a temporary measure to camouflage the defect. Likewise, in cases where an excess of fibrosis is suspected, injections with medications such as triamcinolone can be considered. [8,34,35]

Our proposal for the augmentation of the nasal dorsum, "The fibrin wrap graft," whose evolution is approximately five years to date, where adjustments have been made in the preparation technique over the years, has potential benefits, such as complete biointegration because the entire content of the graft is autologous tissue and it has intrinsic growth factors in the PRF, allowing precise contouring, low complication rate, great enlargement of the dorsum, easily malleable intraoperatively and first eight days postoperatively; however, it is intended in this article to demonstrate the technique with which the graft is made, but at the moment there is insufficient data that allow it to be compared with other types of grafts. There are inherent limitations that will be answered in future research already underway, where the longevity of the graft, the percentage of resorption, and possible medium and long-term complications are objectively assessed.

SUMMARY

The Dice Cartilage graft wrapped with Plasma-Rich Fibrin Sheet, "the fibrin wrap graft," is an excellent alternative for the increase and regularization of the nasal dorsum, being easily usable in open or closed rhinoplasty; its rigidity and flexibility allow this graft to be positioned in augmentation of the radix, supra tip, or of the entire nasal dorsum.[35] The semi-cylindrical shape could be positioned stably on the nasal dorsum. Similarly, Plasma-rich fibrin, an autologous tissue glue (ATG), does not generate significant additional volume, allowing for a precise dorsum augmentation without overcorrection. This ATG contains growth factors and is completely and rapidly absorbed without producing fibrosis or underlying inflammatory tissue[35].

It is necessary to carry out studies where the results can be evaluated in the medium and long term, taking into account the percentage of resorption, that is, the viability of the graft, in addition to possible complications; Likewise, comparing these results with autologous grafts widely used for more than 20 years.

Declarations

Authors' contributions

Senior surgeon, development modification of surgical technique and surgical appliances evaluations: Espinosa J

Surgical nurse, Contribution to technical development and appliances: Villalobos C.

Senior otolaryngologist and facial plastic surgeons, technical evaluation, theoretical evaluation, and appliances: Cobo R, Heredia N.

Facial plastic surgeons' fellows made substantial contributions to the conception and design of the study, performed analysis and interpretation, and provided administrative, technical, and material support: Corredor D, Puerta M, Solís L.

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Conflicts of interest

none declared.

Ethical approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

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