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Hoodplasty: Individualized Approach for Labiaplasties

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Abstract

Introduction Hoodplasties and labia minora reductions are some of the most requested operative procedures by women distressed with the appearance of their vulvar region. In the majority of cases, a concomitant hoodplasty (HP) is performed to achieve a better aesthetic appearance. Various surgical methods have been described for the removal of excess tissue within the clitoris hood area.

Materials and Method This study aims to describe a single surgeon's preference and results in her private practise in 630 patients who underwent labiaplasty mainly because of dissatisfaction with the aesthetic appearance.

Results Of the 630 labiaplasties performed, 303 had clitoris hood excess, 44% of cases with concomitant HP and in 7.9% of cases only a HP was performed. The study was done between September 2009 and December 2021 and the HP technique was longitudinal excision in 97% of patients and horseshoe excision in 4.95% of them. Surgeries lasted between 30 and 60 min. 98% of the patients claimed an improvement in self-esteem and 96% claimed improvement in sex life post-surgery. No major complications occurred.

Discussion An isolated labiaplasty technique in patients with hood excess results in disharmony in the area. HP can be considered as a subdivision of a labioplasty. Extended central wedge labia minora resection (V-plasty) is a commonly used procedure in LP operations but can limit the excess clitoris hood resection. Edge labia minora resection can easily be combined with longitudinal excision of the clitoral hood, and when also horizontal clitoris hood excess is present can also be addressed by converting the resection from longitudinal into a horse hose resection. Limitations in the study include lack of use of validated assessments for the satisfaction of aesthetic outcomes and that all the procedures were performed by a single senior surgeon, which can be seen as a strength but also a limitation because of the high risk of bias. Moreover, there was no comparative cohort for the study population. Furthermore, we could not find comparative cohorts in previously reported techniques in the literature either.

Conclusion Clitoris hood resections should be treated on an individualized approach and adapted according to the excess present. It is important when a patient requests a labiaplasty to always address the clitoris hood during the consultation to avoid unsatisfied patients afterwards. Many patients come just focussed on their labia minora excess and when corrected, realize the clitoris hood excess was also part of the problem.

Level of Evidence III This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

Keywords Clitoris · Clitoral · Hoodectomy · Hoodplasty · Clitoris hood resection · Labiaplasty · Vaginal design

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Introduction

There is an increasing interest in female cosmetic genital operations globally [1] with a 5-fold increase in the number over the past several years [2]. The increasing demand is mainly contributed to our bare-all, web-based culture and easy access to pornography. Cosmetic genital surgeries may be performed for a variety of indications such as aesthetic concerns, difficulties in sexual intercourse, sports and wearing tight clothing, or poor hygiene [2–7]. Enlarged, deformed labia or clitoral hood excess may diminish self-esteem and cause sexual inhibition [6].

The most common indication for labiaplasty is for aesthetic concerns, requested by women who wish for a prepubescent look in the vulval area [2, 6, 7]. A youthful appearance or prepubescent look is described as minimal if any labia minora show with no visible clitoris hood between and youthful, plump labia majora [2]. It is mostly performed to reduce hypertrophic genital labia and/or correct asymmetry.

When clitoris hood excess is not identified preoperatively and the surgeon does only LP, it results in a penis-like shape formed by a prominent clitoris hood, and this leads to patient dissatisfaction [2, 6]. Therefore, it is important to identify excess preoperatively and hoodplasty should be done at the same time with labioplasty (LP) [9]. Clitoris hood redundancy is best detected preoperatively in a standing position. In a standing position the hood excess forms folds and tend to separate the anterior vulval commissure [2].

A hoodplasty (HP) alone procedure is indicated in patients with complaints of excessive skin, fat tissue, or folds only in the hood region [10] and who are not satisfied with the results of LP alone. Isolated hoodplasty operations can also aid in patients with buried clitoris as well, which can be a cause for reduced libido.

This study aimed to elaborate on the different hoodplasty techniques in the literature and define the longitudinal excision technique and horseshoe technique specifically for clitoral hood resection and to bring them to the armamentarium of how to better perform clitoris hood resections and to highlight the importance of identifying clitoris hood excess preoperatively in patients asking for labiaplasty and performing combined LP + HP for better aesthetic results and satisfaction rates.

Materials and Methods

A retrospective analysis was made of patients operated between September 2009 to December 2021 who had only a HP or a LP + HP procedure performed by one single senior surgeon.

The demographic and medical assessment data were obtained during the consultation, as well as extra information collected using a specific survey for patients interested in vulvar/vaginal procedures (Fig. 1). Written consent was obtained from all patients.

Preoperative Assessment

Basic sociodemographic and medical history questions were addressed and recorded such as age (Table 1), previous illnesses, medications, allergies, previous surgeries, number of children and pre and postoperatively results of the survey for patients interested in vulvar/vaginal procedures.

Information on why the patients were seeking the procedure was also obtained. All the patients underwent an examination in the lithotomy position. Of the 630 patients who came for labiaplasty, 303 had excess skin in the labia and clitoris hood area and 24 patients had isolated clitoris hood excess. All the patients were evaluated and classified into longitudinal excess (type 1) and horizontal excess (type II) [8] and they were planned for longitudinal and horseshoe excision. In the group, 44% of patients needed LP+HP and 7.9% of patients only needed HP for clitoris excess.

Exclusion criteria where patients who had an ongoing pregnancy, active genital warts or herpes infections, vulvar lichen sclerosus, coagulopathies, uncontrolled diabetes mellitus, unrealistic expectations, body dysmorphic disorder and psychiatric disorders.

All patients provided full, written informed consent for the use and publication of their statistical data and images. The consent included detailed information on the surgery, risks associated with the surgery, anaesthesia, and medications. They were fully informed about the possible complications of infection, wound dehiscence, bleeding, oozing, hematoma formation, allergic reactions and scar formation.

After the Preoperative examination Patients were categorized into 2 groups based on the type of clitoris excess.

Types of Clitoral Excess

- Longitudinal excess: excess present on the longitudinal axis
- Horizontal excess: excess present on the horizontal axis

Surgical Technique [11]

According to each patient's unique anatomy the patient was marked. There was a wide spectrum of shapes and extent of folds. In occasional patients, the excision was

Fig. 1 Survey for patients interested in vulvar/vaginal procedures.

DR. LINA TRIANA CIRUGÍA PLÁSTICA - BIENESTAR	AS-FO-041 SURVEY PATIENTS INTERESTED IN VAGINAL PROCEDURES	Version 1 Elaboration date: 06-11-2018 Update date: dd/mm/aaaa

Name:_____ID:_____
Date: _____
Below is a list of questions about you and your partner's sex life. All information is strictly confidential. Your confidential responses will be used solely to help Dr Lina Triana understand what aspects of her sexual life are important to patients. Please mark with an (X) the letter that, from your point of view, best answers the question. Answer the questions considering your sexual life during the last 6 months. Thanks for your help.

1. How often do you feel sexual desire? This desire may include wanting to have sex, planning to have sex, feeling frustrated due to lack of sex, etc.
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

2. Do you reach climax (reach orgasm) when you have sex with your partner?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

3. Do you feel sexual arousal (get turned on) when you have sexual activity with your partner?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

4. Are you satisfied with the different sexual activities of your current sexual life?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

5. Do you feel pain during sexual intercourse?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

6. Do you suffer from urinary incontinence (urine leakage) during sexual activity?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

7. Fear of incontinence (faeces or urine) restrict your sexual activity?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

8. Do you avoid sexual intercourse because of drooping bladder, rectum, or vagina?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

9. When you have sex with your partner, do you feel negative emotional reactions such as fear, disgust, shame, or guilt?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

10. Does your partner have an erection problem that affects his sexual activity?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

11. Does your partner have a premature ejaculation problem that affects his sexual activity?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

12. Compared to the orgasms you have had in the past, how would you rate the orgasms you have had in the last six months?
a. Every day **b.** Once a week **c.** Once a month **d.** Less than once a month **e.** Never

Table 1 Age of patients

Age	Percentage of patients (%)
<18 years	0.99
18–29 years	32
30–44 years	35.6
45-59%	29
>60 years	1.98

performed as a "Y" extension of the labiaplasty. Absorbable sutures were used for closure.

Markings

A. Longitudinal hoodplasty (Fig. 2)

It is indicated for correction of horizontal clitoris hood excess and can be combined with resection of the labia minora.

Identification of where the clitoris hood joins the labia minora is done, followed by marking the midline on the clitoris hood above the clitoris glans. Excess mucosa is identified by a pinch test and marked with the help of straight forceps. Resection of excess mucosa is performed on each side of the clitoris body. If the clitoris hood insertion is lower than the frenulum of the clitoris hood glans, the clitoris hood is reinserted on a higher position (near the frenulum of the clitoris hood glans). This is why it is important to always mark the original insertion of the clitoris hood on the labia minora, as well as the frenulum, so when reinsertion of the clitoris hood is intended the possibility of losing anatomical parameters is unlikely. When suturing, the most important point is the reinsertion of the clitoris hood in the labia minora. A three-point suture is used to suture the clitoris hood on its new higher position. Suturing is preferably done with absorbable sutures. Tightening of the suture should be avoided since they can leave visible scalloping scars. The author prefers to use Vicryl 4–0 in as a tension-free running locked suture.

B. Horseshoe hoodplasty (Fig. 3)

A horseshoe resection of the clitoris hood is a continuation of the longitudinal clitoris hood resection that joins cephalically in the midline when there is also presence of a horizontal excess on the clitoris hood. A horseshoe resection can also be combined with a resection of the labia minora.

Markings start as previously described in the longitudinal clitoris hood resection. Then, once the longitudinal resection is performed on each side, both lateral resection margins are joined cephalically in the midline to achieve a horseshoe resection. A horseshoe hoodplasty is performed to prevent noticeable longitudinal scars on the skin of the pubic area or labia majora.

C. Modified horseshoe incision

It can be used when excess is only present on the clitoris hood and is done anywhere in the clitoris hood where the excess is present, but preferably proximal to the pubic region, on the skin mucosa junction.

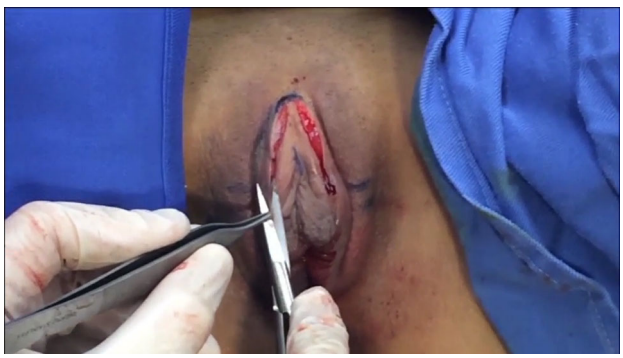

Fig. 2 Longitudinal hood resection markings

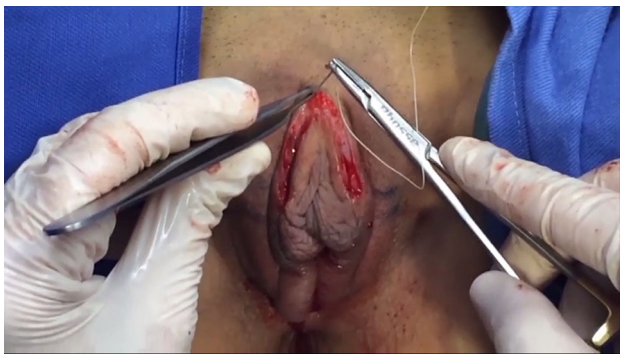

Fig. 3 Horseshoe hood resection markings

Also, a horseshoe incision can be used to elongate the clitoris hood horizontally for better glans coverage by a conventional V-Y flap technique on the upper aspect of the clitoris hood. It is important to consider performing a modified horseshoe incision technique with an overstimulated clitoris.

Also, a modified horseshoe incision can also be done in combination with a Wedge Labia Minora where no connection between both excisions is needed.

Suturing

Suturing is done with absorbable sutures. The author prefers Vicryl 4–0. It is preferable to use a tension-free running crossed suture (continuous locked suture) Always begin suturing by reinserting the clitoris hood in the labia minora with a three-point suture when a combined longitudinal resection of clitoris hood and labia minora is planned.

Results

The time frame of the study was between September 2009 until December 2021. The total number of labiaplasties done in this period of time was 630 cases. A hoodplasty was performed in 303 cases. And of these 303 cases a combined hoodplasty + labioplasty was procedure was performed in 279 (44%) and a hoodplasty alone in 24 (7.9%).

Surgeries lasted between 30 min to 1 hr.

Complications (Table 2)

One of the most common complications are hematomas (1.98%), followed by dehiscence (1.65%). No incidences of infection were seen in our case series. A visible scar was

seen in 2.3% of the cases and generally improved with time and massage.

Changes in sensation were not expressed by patients undergoing a hoodplasty, but in patients with combined labiaplasty + hoodplasty increase sensitivity with friction in the border of the labia was seen. The survey for patients interested in vulvar/vaginal procedures was applied previous to the surgery and 3 to 6 months after. Of the 303 patients that underwent a hoodplasty or combined hoodplasty and labiaplasty procedure, 121 answered the second survey. Amongst the aspects that showed improvement were satisfaction with the orgasms obtained during sexual intercourse and the increase of intensity of these with 98% satisfaction. It was also possible to demonstrate an increase in the excitability of the patients during sexual activity and the frequency of achieving orgasm when having sexual relations with 96% (Table 3) and an overall improvement in sex life as they felt more confident, no more feeling ashamed for being naked, and no need to turn off the lights during intimacy. Also decrease in negative emotional reactions during sexual intercourse was evident, improving the satisfaction in 98% of those surveyed (Table 3). Amongst nonhappy post opertative patients were those that also wanted changes in the clitoris body/head, which is not possible with a hoodplasty alone.

Discussion

The clitoris hood is considered to be a superior division of labia minora. An isolated labiaplasty technique in patients with hood excess results in disharmony in the area [2, 9]. Therefore, HP can be accepted as a subdivision of a labioplasty.

Excess tissue surrounding the clitoris may reduce sensitivity, impair sexual function, and appear aesthetically unpleasant [9]. However, as found in survey studies and as reported in the literature, both patients and surgeons indicate that current preferences for the area are hidden labia minora, with an overall vulva appearance as a single midline cleft [12]. These aesthetic preferences were also verified in our study.

Table 2 Table of complications

Complication	Incidence (%)
Hematoma	1.98%
Dehiscence	1.65%
Visible scar	2.3%
Infection	0
Altered sensation	0

Table 3 Pre and post-surgical results of survey for patients interested in vulvar/vaginal procedures

	Before		After		Before		After		Before		After		Before		After		Before		After	
	Every day	%	every day	%	Once a week	%	Once a week	%	Once a month	%	Once a month	%	Less once a month	%	Less once a month	%	Never	%	Never	%	Total	%	Total	%
Question 1	52	17	30	25	189	62	64	53	52	17	22	18	10	3	5	4,1	0	0	0	0	303	100	121	100
Question 2	90	30	1	1	30	10	116	96	143	47	4	3,3	30	10	0	0	10	3	0	0	303	100	121	100
Question 3	83	27	1	1	70	23	115	95	119	39	5	4,1	21	7	0	0	10	3	0	0	303	100	121	100
Question 4	60	20	3	2	70	23	118	98	121	40	0	0	31	10	0	0	21	7	0	0	303	100	121	100
Question 5	10	3	0	0	10	3	0	0	31	10	5	4,1	82	27	26	21	170	56	90	74	303	100	121	100
Question 6	0	0	0	0	10	3	0	0	0	0	0	0	21	7	2	1,7	272	90	119	98	303	100	121	100
Question 7	0	0	0	0	8	3	0	0	20	7	0	0	8	3	0	0	267	88	121	100	303	100	121	100
Question 8	0	0	0	0	20	7	0	0	53	17	3	2,5	22	7	1	0,8	208	69	117	97	303	100	121	100
Question 9	10	3	0	0	20	7	0	0	52	17	0	0	60	20	3	2,5	161	53	118	98	303	100	121	100
Question 10	8	3	0	0	20	7	0	0	0	0	0	0	28	9	4	3,3	247	82	117	97	303	100	121	100
Question 11	30	10	0	0	10	3	0	0	21	7	0	0	38	13	1	0,8	204	67	120	99	303	100	121	100
Question 12	30	10	0	0	99	33	0	0	143	47	3	2,5	10	3	118	98	21	7	0	0	303	100	121	100

In 2013 Ostrzenski described the classification based on clitoral preputial characteristics and management of clitoris hood abnormalities depending on the type of deformity [13]. He classified clitoris hood abnormalities into three groups and proposed a specific technique for each, describing a reverse V-plasty . However, we prefer to go beyond a V-plasty and include as part of a labiaplasty the clitoris hood resection.

The different HP techniques described in the literature are straight-line resection, extended central wedge resection by Alter 2008 [8], hydro dissection with reverse V-plasty technique for the buried clitoris by Ostrzenski 2010 [14], modified hydro dissection with reverse V Plasty for hypertrophic-gaping clitoral prepuce[13], clitoral subdermal hoodoplasty by ostrzenski 2013 [15], and the edge-wedge labiaplasty by Devgan 2017 [16].

Extended central wedge labia minora resection (V-plasty) is a commonly used procedure in LP operations but in our hands, it limits the excess clitoris hood resection. Edge labia minora resection can easily be combined with longitudinal excision of the clitoral hood, and when also horizontal clitoris hood excess is present can also be addressed by converting the resection from longitudinal into a horse hose resection.

In patients with isolated longitudinal excess—a longitudinal hoodplasty is done. Here the lateral sides of the clitoral hood are removed by marking the excess fold. The advantage of this pattern of excision is that the incision line gets concealed within the inter-labial sulcus. An individualized approach is very important.

And in those patients with a thick clitoris body, even after resection, clitorial bulk will still be present, so it is very important to identify it preoperatively and set the right expectations for the procedure. It is also very important to inform the patient that her clitoris itself will be untouched and still present in the middle of her labia, it will not disappear. Also, when performing horizontal horseshoe resection and/or recreating at a higher level the insertion of the clitoris hood, one can end up with clitoris glans exposure. In longitudinal resections, the mucosa covering the clitoris is not touched, and thus, the risk of exposing the glans and associated discomfort (increase sensitivity with friction) is eliminated.

An advantage of using a combined labiaplasty and hoodplasty is a better aesthetic appearance for the genital area. Also doing a labiaplasty and hoodplasty together can avoid us to go back to OR for secondary procedures. And since there is no extra recovery period for the patient and no significant increase in surgical time or in surgical risk, it is definitely a good option

Disadvantages of doing both a labiaplasty and a hoodplasty in the same surgery can be a higher complexity to reproduce this technique and more easily end up with excessive mucosa around the clitoris hood—labia minora junction.

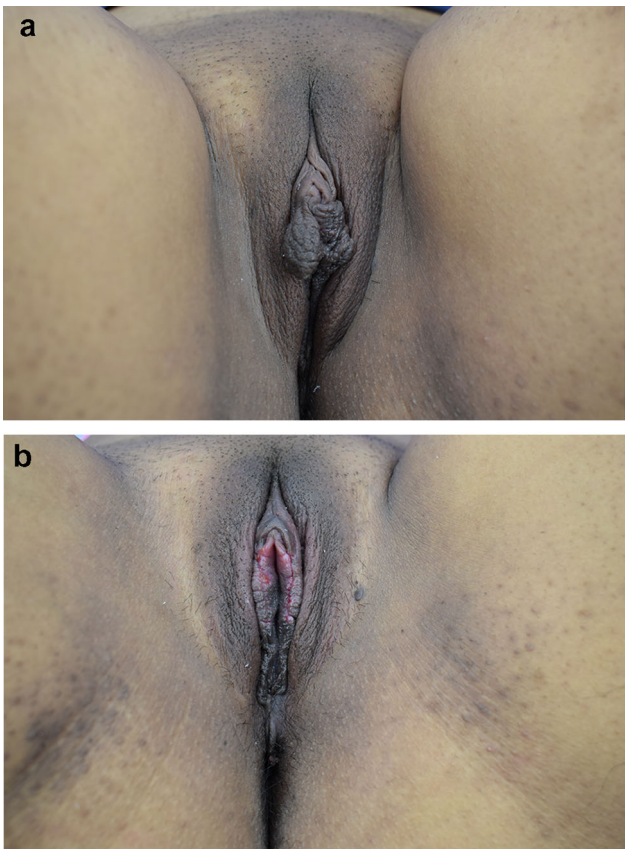

Fig. 4 **a** before and **b** after 8 days pictures of a patient undergoing longitudinal hood and labia resection

In all hoodplasties performed in our series, there were no changes sensitivity or scar formations that disturbed the patients. Neither was there any negative feedback concerning sexual satisfaction, even though we need to have more data from the patients for evaluating their functional conditions in longer postoperative periods. Another of the limitations of our study is the lack of use of validated assessments for the satisfaction of aesthetic outcomes.

All the procedures were performed by a single senior surgeon, which can be seen as a strength but also a limitation because of the high risk of bias. Moreover, there was no comparative cohort for the study population. Furthermore, we could not find comparative cohorts in previously reported techniques in the literature either.

Conclusion

Clitoris hood resections should be treated on an individualized approach and adapted according to the excess present. It is important when a patient requests a labiaplasty to

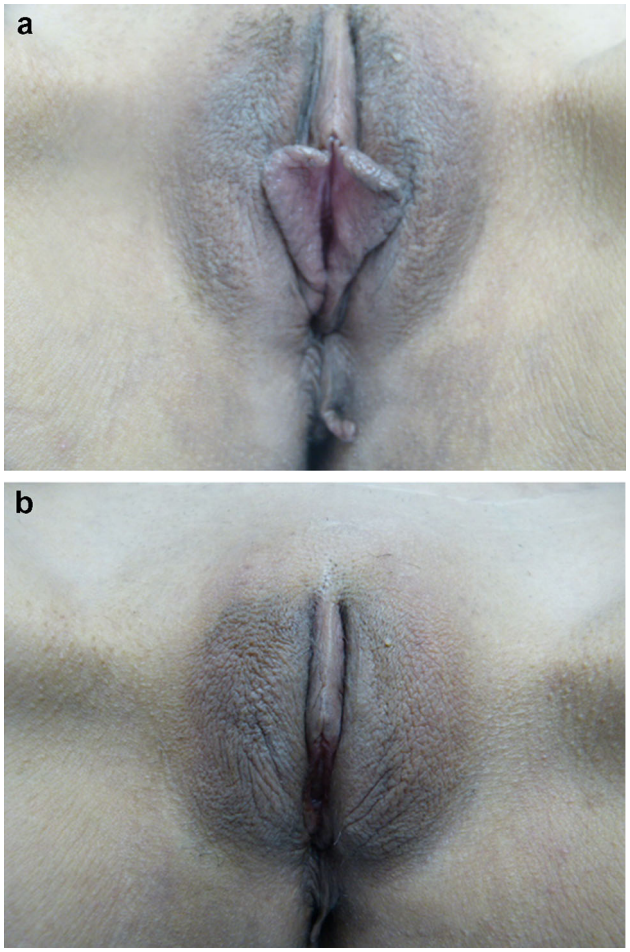

Fig. 5 **a** before and **b** after 2 months pictures of a patient undergoing only a hoodplasty

always address the clitoris hood during the consultation to avoid unsatisfied patients afterwards. Many patients come just focussed on their labia minora excess and when corrected, realize the clitoris hood excess was also part of the problem (Figs. 4 and 5).

Comply with ethical standards, no founding was received to assist in the creation of this manuscript and Dr. Triana, Dr. Harini and Mr. Liscano have no conflict of interest to disclose. This article does not contain any studies with human participants or animals performed by any of the authors. For this study informed consent is not required.

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