Journal of Plastic, Reconstructive & Aesthetic Surgery (2019) 72, 356–362

JPRAS
An International Journal of Surgical Reconstruction
www.JPRASurg.com

Correspondence and Communications

Fast and inexpensive production of "homemade" PRP: A simple method

Dear Sir,

Platelet-rich plasma (PRP) is increasingly used to improve wound healing in plastic surgery, orthopaedic surgery or maxillofacial surgery, and as a tissue inducer in skin, muscles, tendons, cartilage and bone.

There are many manufacturing methods for obtaining PRP, which are classified into 2 main types: one centrifugation methods and 2 centrifugations methods depending on whether 1 or 2 centrifugations are performed before collecting PRP. In addition, there are numerous commercial kits that have simplified the process of obtaining PRP.

The method we propose is based on the article by Fukaya and Ito "A New Economic Method for preparing PRP" [1] that we have tried to simplify.

The purpose of this article is to describe a simple, fast, reliable and inexpensive method of manufacturing PRP, and to evaluate its quality.

Our manufacturing method was performed in 40 healthy volunteers working at the Henri Mondor University Hospital, to whom a PRP injection had to be performed. A signed consent had been obtained for each volunteer.

The different steps of our method of fabrication were (Figure 1):

Blood sample

Step 1: in a 10 mL syringe, pre-fill of 1 mL of heparin (5000 units).
Step 2: collection of venous blood in the 10 mL syringe containing 1 mL of 5000 units of heparin to obtain a 10 mL mixture (9 mL of blood and 1 mL of heparin).
Step 3: installation of a "Luer Lock" plug.
Step 4: agitation of the syringe to mix the blood and heparin.

A 0.5 mL sample of the mixture is recovered to measure the blood cells count.

Centrifugation

Step 5: cut the syringe piston and the syringe "wings" so that it can hold the "cap up" in the centrifuge.
Step 6: centrifugation of the syringe the "cap up" for 5 min at 460 g (1800 rpm).

PRP collection

Step 7: installation of a 3-way stopcock connected to an empty 10 mL syringe.
Step 8: recovery of the upper "yellow" phase via the 3-way stopcock until the red phase reaches 1 mL.
Step 9: agitation of the obtained PRP to homogenize the platelet concentration throughout the collected PRP.

A 0.5 mL sample of the mixture is recovered to measure the blood cells count.

Cell counts were performed by a Horiba© ABX MICROS 60 counting machine for blood and PRP samples.

The primary endpoint was the ratio of platelet concentration of the PRP obtained in comparison with the platelet concentration of the venous blood.

Secondary endpoints were the assessment in the PRP obtained of the red and white cells purity, and the platelet capture rate.

The "homemade" PRP that resulted was (Table 1):

- an average ratio of 1.92 times (±0.39) the blood platelet concentration,
- an average volume of 4.11 mL (±0.55 mL) obtained from an average of 9.33 mL (±0.31 mL) of blood + heparin mixture (after extraction of a 0.5 mL sample),
- an average platelet capture percentage of 85.04% (±9.1%),
- an average red blood cell purity of 99.80% (±0.07%).
- an average white blood cell capture percentage of 16.45% (±7.4%),
- an average ratio of 0.11 times the concentration of white blood cells.

In conclusion, this homemade PRP manufacturing method with a 5 min centrifugation resulted in a PRP with an average platelet concentration ratio of 1.92 (±0.39), an average platelet capture percentage of 85.04% (±9.1), a red cell purity of 99.80% (±0.07) and the exclusion of 83.55% of white blood cells.

One of the objectives of this method was to show that it was possible to obtain a good quality PRP by a very simple fabrication method.

The choice to carry out a method with only 1 centrifugation had as much for objective to gain in manufacturing time as to gain in simplicity of realization.

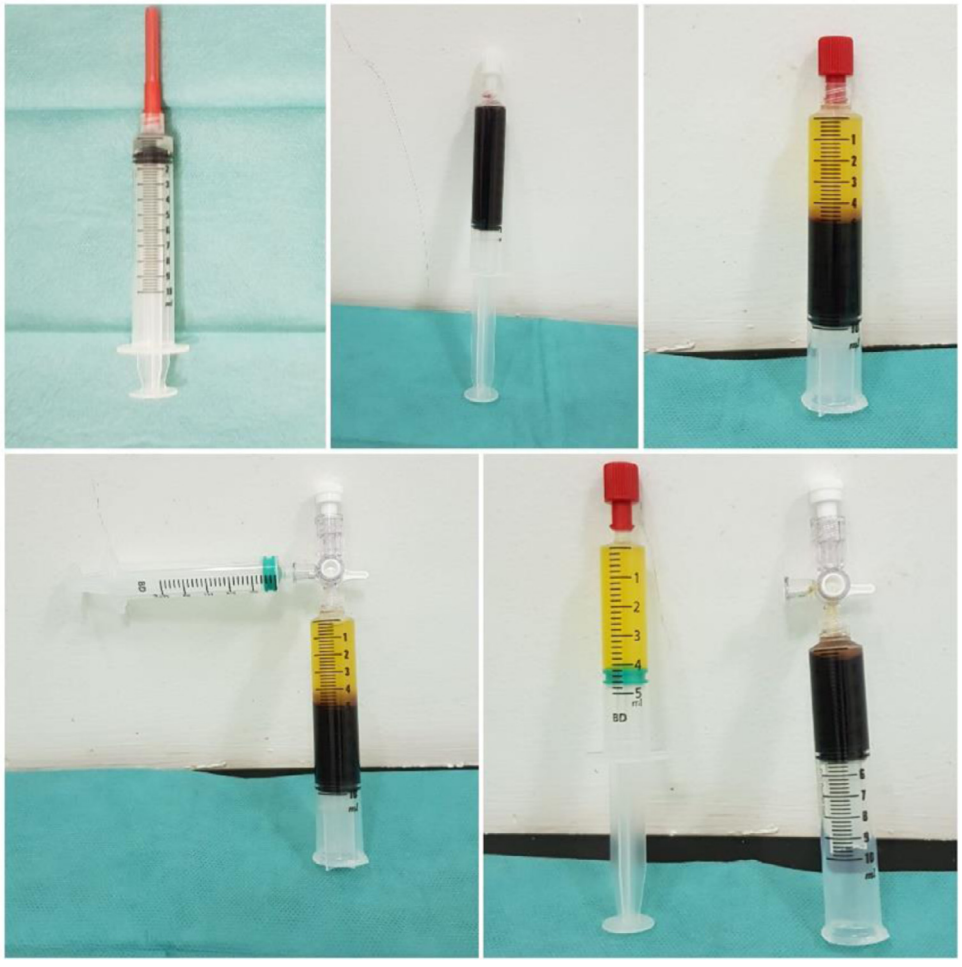

Figure 1 Equipment and PRP obtained.

Table 1 Characteristics of PRP obtained.

Average ratio of platelets	Average volume of PRP	Average percentage of platelets capture	Average percentage of leukocytes capture	Red cells purity
1.92 ± 0.39	4.11 mL ± 0.55	85.04% ± 9.1	16.45% ± 7.4	99.80% ± 0.07

The manufacturing time for our PRP, which included material preparation, blood sampling, centrifugation, and PRP recovery was approximately 15 min.

We arbitrarily chose to use of 1 mL of 5000 units of heparin to achieve a total volume of 10 mL of blood + heparin preparation. However, we recognize that the vast majority of commercial kits[2] (e.g. Regen©, Proteal©, GPS©, Selphyl©, MyCells©, WorldPRP©) use the ACD-A anticoagulant in their kits.

The first limit of our homemade method is the need to carry out some manipulations modifying the initial material, notably cutting the piston and the wings of the syringe. Although all these manipulations were carried out in closed circuits and no technical difficulties were encountered, it must be recognized that commercial kits make it easier to obtain PRP and to avoid these "do-it-yourself" manipulations.

The second limitation of our homemade method is the impossibility of obtaining a PRP highly concentrated in platelets. Indeed, to obtain highly concentrated PRP, it is necessary to evacuate the maximum amount of platelet poor plasma, whereas our 1 centrifugation method did not.

Conflict of interest

None of the authors declare any kind of conflict of interest.

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https://doi.org/10.1016/j.bjps.2018.10.027

Reply to: BAPRAS and BAAPS scientific meetings: Are we sticking are noses up at rhinoplasty

Dear Sir,

Thank you for allowing us to respond to the letter by Arshad et al.[1] on a topical and important issue. We agree that this is an important subject that should not be overlooked.

At the British Association of Aesthetic Plastic Surgeons, we are acutely aware of the challenges and threats to our speciality regarding rhinoplasty surgery. An increasing proportion of plastic surgeons (and ENT colleagues for that matter) are withdrawing from performing rhinoplasty surgery. Rhinoplasty is challenging surgery that ought to be undertaken by surgeons performing the procedure regularly, rather than being "occasional" rhinoplasty surgeons.

However, it is vital that rhinoplasty remains at the forefront of our educational curriculum, both as a topic at national conferences and as part of the FRCS(Plast) exam, as it one of the main aesthetic (and reconstructive) surgical procedures.

Indeed, 50% of the clinical theme of our 2017 annual scientific conference was dedicated solely to rhinoplasty surgery, with a group of internationally respected speakers on faculty; as have other BAAPS conferences been organised in the recent past. This demonstrates the BAAPS' commitment to continual education on rhinoplasty.

We would question, however, the validity of the authors passing judgement based on an assessment of free papers and posters, as opposed to the invited talks presented at the BAAPS annual meetings. As has been established for many years, the significant majority (95%) of content at the BAAPS meetings is delivered from invited speakers as opposed to free papers. With this in mind, the BAAPS has an excellent track record of maintaining rhinoplasty as a key topic at its annual meetings over the years and will continue to do so into the future.

We thank the authors for raising this important topic, and would encourage a continued interest in rhinoplasty surgery amongst the UK plastic surgery community.

Conflict of interest

The authors are all BAAPS Council members, including the current president and the immediate past president

Funding

N/A

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1. Arshad Z, et al. BAPRAS and BAAPS scientific meetings: are we sticking our noses up at rhinoplasty? *JPRAS* 2018;**71**(9):1362–80.

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https://doi.org/10.1016/j.bjps.2018.10.048

The evolving role of the chaperone in medicine-protection and training: A plastic surgery perspective

Dear Sir,

The role of the chaperone is integral in clinical examination and with this short communication aim to highlight the evolving role of the chaperone as a "witness" who with the appropriate training and standardised documentation can

Table 1 Results of staff questionnaire in relation to a hypothetical scenario.

No	Questions in relation to hypothetical scenario	Confidence level (Mean result)	Confidence level (Range)
1	Confidence in recalling consultation from **memory** only?	4/10 confidence	1-6
2	Confidence in recalling consultation from **hand written** note>	7/10 confidence	6-9
3	Confidence in recalling consultation from **checklist**?	8/10 confidence	7-10
4	How clearly does the guided checklist fulfil the requirements of the consultation?	9/10 confidence	7-10
5	How well would you remember the points above if the checklist was not in front of you but available in the clinic?	7/10 confidence	5-9
6	How confident would you be in supporting a doctor following a complaint if the checklist was completed by you and filed in the notes?	9/10 confidence	9-10

act as an observer of the behaviour of all parties during the consultation.

Complaints by patients to the General Medical Council (GMC) have doubled in the past five years (54% increase from 3858 in 2010 to 5808 in 2014, GMC, 2016), a pattern which is consistent within our Trust.[1,2]

In the UK, the GMC produced guidelines in 2001 recommending that registered doctors use a chaperone for intimate examinations (those involving the genitals, rectum or breasts).[3] In the 2013 GMC update of Good Medical Practice, *'Intimate Examinations and Chaperones'* forms a key part of the *'Maintaining Boundaries'* section.[4,5] Importantly, these guidelines not only set out the role of the chaperone as a patient advocate but also state that protection of doctors is also essential.

Plastic surgery is a high risk speciality for litigation and complaints. Although most local trusts have generic chaperone policies in place, these are generally for the physical examination that takes part during the consultation. We feel that the whole consultation and interaction, not just the physical examination, should be recorded in a standardised manor using GMC Good Medical Practice Guidelines (2013) and we suggest the chaperone be given the role of 'medical witness' to represent the duties this involves.

Choudry et al.[6] reported that only 10% of plastic surgeons surveyed consistently documented in the notes with 69% responding that they never documented. (7) Choudry et al.[6] also reported that almost 8% of plastic surgeons in their study had been accused and/or sued for inappropriate behaviour by a patient, of whom 80% did not have a chaperone present when examining those patients.

We created a questionnaire and provided it to clinic staff to identify confidence levels in recalling events of a consultation using a hypothetical case (Appendix 1). The questionnaire assessed the reliability of current and new proposed methods of documentation to help them recall the events of a consultation.

Twenty one out of the 33 staff members confirmed the checklist tool (Appendix 2) was a helpful adjunct to any consultation requiring a chaperone (Table 1).

Although the questionnaire was completed by a limited number of nursing staff, it has provided a baseline impression on how confident 'chaperones' are at recollecting a consultation. It is clear from our results that the more that is documented, the more reliably the chaperone can recall the events of the consultation and thus provide an objective and neutral testimony in a potential complaint. The guided checklist eliminates the element of uncertainty and subjectivity of memory, as the consultation is documented in real time. The senior author, had three complaints that were not upheld as a result of the witness/chaperone guided checklist. These cases highlight the requisite for the guidelines to be challenged and for the situations in which chaperones are required to be redefined.

Conflict of interest

None.

Funding

None.

Sources of funding

None.

Declarations

This work has been presented as an Oral Presentation at the British Association of Plastic, Reconstructive and Aesthetic Surgeons and the Finnish Association of Plastic, Reconstructive and Aesthetic Surgeons joint meeting in Helsinki 2017.

Appendix

(1) Plastic Surgery Hypothetical Case circulated staff prior to circulating questionnaire.
(2) Proposed guided checklist tool for the role of chaperone/ witness based on GMC Good Medical Practice.

Appendix 1. Hypothetical case distributed to staff prior to circulating questionnaire

Hypothetical Case Scenario for the Chaperone/ Witness
"A 32 year old female with a BMI (body mass index) of 59 (clinically obese) attends for an initial consultation for consideration of an abdominoplasty ('tummy-tuck') as she is unhappy with the appearance of her abdomen. She is a smoker and takes antidepressants. She is currently working as an office administrator.
Examination reveals that she may benefit from an abdominoplasty but unfortunately she does not fulfil the 'Procedures of Low Clinical Priority' NHS guidelines to have an abdominoplasty on the NHS. She leaves unhappy but appears to accept the outcome of the consultation. You witnessed the consultation and acted as a chaperone during the examination and at that time you felt that the Doctor acted professionally. Two months later a complaint has been made via PALs against the doctor involved and you are asked to write a statement"
Please kindly fill out the questionnaire. This aims to assess which current and new proposed methods you feel would best help you to recall the events of a consultation and to be confident in writing a report / statement if requested months down the line:
1) Where you as the witness signed and dated the casenotes.
2) Where you as the witness wrote a comment or sentence and signed the casenotes.
3) Where you as the witness completed a guided checklist-tool comparing the doctor's performance against the key points as highlighted by the GMC good medical practice guidelines?

Appendix 2. Guided checklist tool based on GMC guidance

Please see the following declaration of the role of the witness during a plastic surgery consultation:

Role of the witness in the Plastic Surgery Clinic

The witness is present to record that the consultation takes place in what appears to be an appropriate and professional manner.

The doctor welcomes the patient into the room and introduces him/herself	
S/he explains why the patient is being seen with reference to clinic letters	
S/he listens to the patient and acknowledges their opinions	
S/he examines the appropriate body area	
The patient appears comfortable with the examination	
The doctor presents his/her professional opinion in what appears to be an acceptable manner to the patient	
The doctor gives a clear plan as to how to proceed	
The patient leaves the consultation having indicated they accept this plan	
The patient has been given opportunity to voice their opinion about the plan	

Comments

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Signed Date

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https://doi.org/10.1016/j.bjps.2018.10.040

Video-recording a surgical procedure

Dear Sir,

I have read the letter titled "Viability of a modified GoPro for professional surgical videography"[1] by Zoltie and Ho, and felt the need to share our experience and emphasize several aspects of the video-recording a surgical procedure. The authors Zolttie and Ho have stressed the difficulties associated with such recordings, i.e. cost, positioning, focusing; yet there remains one more issue: lighting, as surgery is done under intense lighting. This is of utmost importance in order to obtain a decent recording, as most surgeries are being done with surgeon's headlight in addition to external lighting; yet the surgeon's headlight brings an intermittent further lighting to the field during his/her work and darkening while he/she looks elsewhere. The shutter speed, aperture, ISO, white balance, color features within the camera, definitely, need to be manually adjustable. Even so, it may not be sufficient.

Manual focus, or rather avoiding autofocus is another requirement, as the authors Zoltie and Ho have felt the need for as well. With autofocus cameras being used, every time a surgical instrument entering or leaving the field would cause a temporary blurring of the image, which is a troublesome moment for the viewer and a need to crop while editing the film.

The authors have not brought the issue of the distance from the camera to the surgical field, which I believe is another issue that may cause troublesome recordings, as the surgeons' heads may interfere with the surgical field. The angle of the camera to the surgical field needs to be approximately parallel to the surgeon's vision. With any camera being positioned from behind the surgeon's head, either the surgeon's head position (in order to leave a viewing spot for the camera) or the recording gets compromised.

Our experience was published.[2] We decided to do the recordings on rhinoplasty procedures, as it meant further challenges. The surgical field is narrow, deep and dark. We used an operating table's bar to position the camera at a 33–38 cm. distance from the patient's cheek. We used a handheld size, fully manually controllable camera recording high definition (HD) resolution (1080p at 60 frames per second in the AVCHD (Advanced Video Coding High Definition) format). We mounted a continuous bicycle light, providing a light of 6000 Kelvin color temperature, at a 19° spot angle. With such an addition to the setup, we were able to obtain a continuously well-lit surgical field, with intermittent light intensity changes which were not too bothersome.

With such a setup, we were able to get satisfying results and get recordings of a narrow, deep and dark field. Finally, in regards to the cost and of personnel requirement, it is a relatively very low cost solution and no operating person is required.

Funding

None.

Conflicts of interest

None declared.

Ethical approval

Not required.

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https://doi.org/10.1016/j.bjps.2018.10.045