



## Novel Covid 19 - Associated Otological Symptoms and Role of PRP

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### Abstract

A comparative study of effect of Intratympanic Dexamethasone and intratympanic PRP in patients presented to Harsh ENT hospital, Ghaziabad with positive Covid 19, and symptoms like heaviness in ears, vertigo and/or tinnitus, and/or bodyache, and/or hearing loss. There was significant improvement in hearing loss and other otological symptoms in majority of patients with IT PRP compared to IT Dexamethasone.

**Keywords:** Covid 19; Intratympanic; Dexamethasone; Platelet Rich Plasma

### Introduction

Aeons ago, human beings first discovered a great principle in medical practice. It has been identified that if inflammation in an organism could be generated on purpose, it would start the healing process. As per Alves and Grimalt (2018) [1], this remarkable discovery was first documented by Roman author Celsus. At first Zadehmodarres., *et al.* (2017) at present, PRP treatment is different in several ways from what Dr Hackett had experimented with. But it uses the likewise techniques of introducing the irritants to the blood which will start the process. Fortunately, the platelets are not only mild irritants causes vasodilation but also powerful delivery mechanisms of important growth factors. That is why; PRP injections are therapeutically beneficial with a double stroke. They evoke inflammation and supply a repairing element to the injured tissue. The term PRP was coined to differentiate between the blood which has higher platelet count than the normal blood. This platelet, which has a higher platelet count than the normal rich blood was used for transfusions for the people with low platelets. Physicians started to use PRP in case Surgeries 1980 onwards. The primary reason was it has various properties to initiate wound closure, healing inflammation, and cell growth. The commonest surgeries where PRP was used were periodontal surgery, maxil-

lofacial surgery, cosmetic surgery and skin grafting. After that, doctors used PRP to assist in bone healing. PRP Basics - Miron., *et al.* [3] (2017) rich elements play Blood platelets start several kinds of tissue repair in the human body as those contain various important growth elements. Usually, platelets contain Cytokines, mitogens. These are the key components of mesenchymal cell attraction with mitosis stimulation. Platelets enhance the production of fibroblasts as well. Studies say Platelet therapy helps to repair wounded tendons as soon as the injection gets pushed. This is because; the PRP therapy assists to bring healthy blood in the wound to generate new cells, which increase metabolic action. This sweeps in the vessel growth, enhancing nutrition in the wounded area. PRP studies and trials. The clinical research about the PRP treatment is pace after the year 2009. In the view of still a handful, although it picked up Krick and Bressler (2018), practically a lot of clinical trials have taken place within just a few years after that. The trials showed hopeful results in the scenario of wounded tendons in human subjects. 2010 was a watershed year for PRP research. In that year a random and controlled study appeared in JAMA which did not report a single cabalistic proof of the faculty of PRP. As a consequence, many academicians rejected the idea as void. By chance, in the same year, a study done in the Netherlands was more evidence

based. A hundred subjects who were the patients of lateral epicondylitis were treated with either PRP or corticosteroid technique. After a year of trials, the PRP subjects showed improvements more than the other batch. The result revived the belief of the science community with PR P. PRP was used in treating osteoarthritis as well. After 2010, two studies suggested that it could be used to heal knee arthritis. After trial and follow up of two months, the subjects who received PRP therapy showed remarkable improvement. Similarly, research suggested and proved that PRP can be used to cure ankle and foot pain. PRP Therapy Today In the view of Cengiz., *et al.* (2018) [4], despite research getting lots of positive results about PRP, it still lacks a standardized method. For example, there are no widely accepted protocols for the treatment. No typical ways for any preparation processes like activating the growth factors, specification of injecting sites and so on. Due to so many procedures, it is impossible to make an objective universal evaluation clinical trials. Comparing Recent studies showed that, although the subjects adhered to PRP treatment reflected desired results; the non conclusions from the trial. Standardized protocols prevented drawing any important. This hapless condition can be solved by working to publish a standardized guidebook of PRP treatments. A universal PRP protocol is also required.

Dr B P S Tyagi and Dr Mamatarani Rout Injecting PRP in Otorhynolaryngological Diseases

- Sensorineural Hearing loss [5]
- Tinnitus [5]
- Myringoplasty (CSOM) [7]
- Leukoplakia
- Oral lichen planus
- Chronic Wound healing
- Post operative surgical wounds
- Pharyngo Cutaneous fistula
- Phonosurgery
- Alopecia [6]
- Comedones

The use of platelet enriched plasma has gauged several fields of medical science. From dermatology, chronic ulcer management to trichology and aesthetics, PRP aced in its treatment due to its role in wound healing. But there is still confusion over proper termi-

nology to define, classify and denominate various types of platelet concentrations. It lacks acute characterisations too. Moreover, the huge variation in the reported procedures for standardizing and preparing PRP is creating obstructions in proper universal research works in the specific field.

### Principles of PRP preparation

Platelet Rich Plasma has been prepared by a procedure that is considered as differential centrifugation. During this process, acceleration force has been adjusted for the sedimentation of specific constituents that are entirely based on varied gravitational forces of the patients. Many ways have been followed for the preparation of this PRP. Amidst the methods, two specific methods have been considered as convenient ways to prepare it. These are respectively the PRP method and Buffy-coat method. The features of these methods have been discussed below.

### PRP method

During this method, red blood cells are alienated with a following process of centrifugation in order to concentrate platelets that are being suspended in the tiniest plasma volume (Kamfa., *et al.* 2018). Whole blood is also accumulated in tubes. At the very first stage, red blood cells are being separated from the WB (in tubes), and then whole blood is subdivided into consecutive three layers. The first layer consists of platelets and white blood cells. The next layer that is specifically known as the buffy coat, comprises of WBCs that are predominantly rich in it. The last layer comprises of mostly RBCs. In order to produce fresh PRP, the first layer and buffy coat are needed to transfer into a vacant tube. Apart from that, the whole layer of the buffy coat along with few red blood cells is shifted for manufacturing leucocyte rich PRP. During the second stage, soft pellets are formed at the very bottom of the tube, and then, platelet-poor plasma is removed from the upper portion of the volume in order to create platelet-rich plasma with homogenized pellets. During the separation of platelet, blood is not supposed to be chilled, simultaneously blood is being centrifuged with a soft spin during this specific method, PRP method.

### Benefits

PRP method is very much ideal and beneficial for the rejuvenation that smoothes wrinkles with efficiency and also it is very much helpful in enhancing overall skin texture. This method is also very much significant since no foreign products are utilized and hence, it is a completely safe method to be used for the preparation of PRP.

**Buffy Coat method**

The method is known as buffy coat due to a buff that is kind of yellowish to brownish in color. Buffy Coat is combined with the platelets and white blood cells of the whole blood (Napolitano., *et al.* 2019). This is the intermediate layer amongst the three consecutive layers. At the very initial stage, the whole blood is stored at a temperature of 20°C to 24°C. Then, the whole blood is centrifuged at a tremendously high speed. Because of this density, the bottom layer has consisted of RBCs, the next layer comprises of platelets and WBCs and the summit layer consists of PPP. After that, resilient plasma from the top of the container is removed that results in transferring the buffy-coat layer into another sterilized tube. The buffy coat layer is centrifuged at a very low speed in order to remove WBCs for the production of PRP. Benefits: This method is very much beneficial and influential for the improvement of platelet yield. It is considered as one of the ideal methods in order to meet with requirements for platelet. It has also taken a grand part in alleviating the possibility of contaminated leukocyte in the platelet. The patients who face the limitations due to their platelet, it is helpful for them in diminishing cost.

Methods of preparing PRP By Dr B P S Tyagi and Dr Mamatarani Rout 1. Give 3 Lts/mint Oxygen Inhalation For 1 Hour Prior To Collection.

- Collect the Sample With 18 gauge Needle.
- Transfer The PRP From Vacutainer to Syringe with 18 No. Needle
- For IT PRP Use 22 No. L.P Needle (Kids/Adults)

Inject At BPST Point With 0 Degree Endoscope : BPST point is the point of intersection of origin of chorda tympani from facial nerve in facial canal and insertion of posterior malleolar fold to annulus of tympanic membrane. BPST point lies 2mm anterior to this point of intersection in pars tensa.

**Methodology**

In our institution from the month of march till august, here is the data of patients who were having otology symptoms with covid 19 positive report. Tables We had reviewed 27 patients who visited our out patient department at Harsh Ent hospital with positive covid 19 test and symptoms related to otology such as hearing loss, heaviness in ears, giddiness, vomiting, ringing sensation in ears. After proper evaluations and relevant investigations, we injected PRP intratympanic in patients, keeping intratympanic Dexamethasone another as control. Post injection patient were evaluated with PTA.

Patient No.	HPC No.	Days of symptom	Name of the Hospital	Symptoms	Results
1	21859	Day-3	Harsh ENT Hospital	Heaviness Lt Ear, Bodyache, Vertigo	Positive Ct Value Egene -25.12 Ngene - 31.73
2	21723	Day-7	Harsh ENT Hospital	Bodyache, Hearing Loss Rt Ear, Tinnitus	Positive Ct Value Egene -27.51 Ngene - 32.67
3	21993	Day-4	Harsh ENT Hospital	Vertigo, Tinnitus, Bodyache,	Positive Ct Value Egene -26.19 Ngene - 28.34
4	22051	Day-6	Harsh ENT Hospital	Heaviness Rt EAR, Bodyache,	Positive Ct Value Egene -25.63 Ngene - 31.57
5	22069	Day-5	Harsh ENT Hospital	Hearing Loss Lt Ear, Bodyache	Positive Ct Value Egene -26.49 Ngene - 32.17
6	22164	Day-6	Harsh ENT Hospital	Heaviness Lt Ear, Vertigo, Bodyache	Positive Ct Value Egene -25.13 Ngene - 27.44
7	22262	Day-4	Harsh ENT Hospital	Hearing Loss Both Ears, Bodyache	Positive Ct Value Egene -28.36 Ngene - 31.43
8	22303	Day-3	Harsh ENT Hospital	Tinnitus, Bodyache	Positive Ct Value Egene -25.52 Ngene - 28.33

9	22307	Day-4	Harsh ENT Hospital	Hearing Loss Rt Era, Bodyache	Positive Ct Value Egene -28.91 Ngene - 32.75
10	22393	Day-7	Harsh ENT Hospital	Heaviness Rt Ear, Tinnitus, Vertigo, Bodyache	Positive Ct Value Egene -25.31 Ngene - 29.41
11	22246	Day-5	Harsh ENT Hospital	Tinnitus, Vertigo, Bodyache	Positive Ct Value Egene -27.75 Ngene- 30.12
12	20279	Day-6	Harsh ENT Hospital	Heaviness Rt Ear, Bodyache	Positive Ct Value Egene -29.11 Ngene - 32.79
13	21641	Day-4	Harsh ENT Hospital	Heaviness Lt Ear, Hearing Loss Lt Ear, Bodyache	Positive Ct Value Egene - 25.23 Ngene - 31.81
14	22520	Day-3	Harsh ENT Hospital	Hearing Loss Both Ears, Bodyache	Positive Ct Value Egene -26.14 Ngene - 31.27
15	22610	Day-8	Harsh ENT Hospital	Tinnitus , Bodyache	Positive Ct Value Egene -28.16 Ngene - 30.87
16	22663	Day-8	Harsh ENT Hospital	Heaviness Rt EAR, Bodyache	Positive Ct Value Egene -26.64 Ngene - 29.61
17	23046	Day-4	Harsh ENT Hospital	Vertigo, Tinnitus, Bodyache	Positive Ct Value Egene -25.46 Ngene - 27.53
18	23189	Day-6	Harsh ENT Hospital	Tinnitus, Hearing Loss Both Ears, Bodyache	Positive Ct Value Egene -28.12 Ngene - 32.72
19	19387	Day-7	Harsh ENT Hospital	Heaviness Rt EAR, Bodyache	Positive Ct Value Egene -26.29 Ngene - 29.73
20	23367	Day-7	Harsh ENT Hospital	Heaviness Lt Ear, Bodyache	Positive Ct Value Egene -28.17 Ngene - 30.74
21	12209	Day-5	Harsh ENT Hospital	Vertigo, Tinnitus, Bodyache	Positive Ct Value Egene -25.23 Ngene 29.45
22	23471	Day-5	Harsh ENT Hospital	Hearing Loss Both Ears, Bodyache	Positive Ct Value Egene -27.29 Ngene - 30.40
23	22909	Day-6	Harsh ENT Hospital	Tinnitus, Hearing Loss Both Ears, Bodyache	Positive Ct Value Egene -26.67 Ngene - 31.39
24	23523	Day-8	Harsh ENT Hospital	Heaviness Lt EAR, Bodyache	Positive Ct Value Egene -25.52 Ngene - 29.13
25	23762	Day-3	Harsh ENT Hospital	Heaviness Lt Ear, Bodyache	Positive Ct Value Egene -27.36 Ngene - 31.7
26	23251	Day-7	Harsh ENT Hospital	Vertigo, Tinnitus, Bodyache	Positive Ct Value Egene -25.17 Ngene - 30.19
27	23582	Day-5	Harsh ENT Hospital	Heaviness Both EARS, Vertigo, Bodyache	Positive Ct Value Egene -26.74 Ngene - 30.11

**Table:** Covid Positive Patient Data.

## Result

In 7 patients, IT Dexamethasone (0.2ml) was injected and in 20 patients IT Platelet-Rich plasma was injected Intratympanic. Those whom Dexamethasone was given, they had 3 to 4 db of hearing gain per injection and 40 to 42 % of reduced other otology symptoms. Those with IT Platelet Rich Plasma, there was 8 to 10 db of hearing gain per injection and 90 to 92 % of reduced other otology symptoms.

## Conclusion

For hearing loss and other otology symptoms Intratympanic PRP is the better modality, even in covid 19 affected patients.

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