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Letter to the Editor

What do we use: Platelet-rich plasma or platelet-rich gel?

Sir:

We have read the manuscript by Gandhi and colleagues ‘The effects of local platelet rich plasma delivery on diabetic fracture healing’ (2006, 38: 540–546, [1]) with great interest. We are very impressed by the results of their interesting investigation. We agree that the use of autologous growth factors in combination with tissue engineering seems to be the most promising method for the treatment of bone fracture in future.

Most authors report the usage of the platelet-rich plasma (PRP) in their investigations [2,3]. In our opinion this name is not fully correct. Plasma is fluid part of blood with all its clotting mechanisms intact and ready for operation, while activation of clotting mechanisms is essential for wound/fracture healing. Indeed after appropriate blood centrifugation, PRP could now be easily obtained. However, what is injected into a fracture site is usually a combination of PRP and thrombin, which results in gelatinous mass formation. Only when the clotting system in PRP is activated by thrombin, series of proteolytic reactions is initiated that ultimately results in platelet degranulation and the conversion of soluble fibrinogen into insoluble fibrin. One should also take into account that thrombin itself stimulates fibroblast proliferation, synthesis of type IV collagen and active mediators such as NF-kappaB, etc. [4–6]. This is why we would suggest using the name, which contains both active substances, i.e., PRP and thrombin. Thus, “platelet-rich gel” would more precisely describe this biologically active matrix. Moreover, in some instances PRP could be administered without thrombin, e.g., in chronic severe elbow tendinosis [7].

One should also remember that platelet-rich gel might contain substantial amount of leukocytes. Neutrophils and lymphocytes are important elements of the immune system and they play an important role in post-fracture bone healing processes [8]. Therefore, it would be very interesting to know the concentration of white blood cells in PRP. This would be of particular interest in diabetic fractures, where the frequency of wound infections is much higher than in cases without systemic disorders.

In conclusion, the PRP is an inactive substance. Only after its activation, the platelet degranulation and massive growth factor and active substances like serotonin, catecholamines, von Willebrand factor, proaccelerin, osteonectin and others release

from the granules occur forming the active gelatinous matrix [9,10]. We would rather suggest the term “platelet-rich gel” for this osteoinductive biomaterial rich in platelets, leukocytes and related active substances.

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