

Effect of Platelet Rich Plasma Application on Postoperative Outcomes Following a CABG

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OBJECTIVE

Recent publications demonstrated improved outcomes during cardiac surgery when platelet rich plasma (PRP) and platelet poor plasma (PPP) were applied during closure of the sternal and leg wounds [1,2]. These studies indicate a potential utility for PRP and PPP application in cardiothoracic surgery; however, further studies are necessary to truly measure the clinical efficacy of this intervention. A retrospective analysis of 1128 consecutive coronary artery bypass graft (CABG) cases performed. This study measured the effect of PRP and PPP application during closure of the surgical wound(s) following a CABG.

METHODS

Surgical Method-Standard open surgical methods were used on all median sternotomies. Saphenous vein harvest was done using endoscopic techniques.

PRP Production-The GPSTM II Platelet Concentrate System (Cell Factor Technologies, Warsaw IN) was used to produce 5-7cc of PRP and 25-35cc of PPP from a 55cc whole blood draw anticoagulated with 5cc of ACD-A.

PRP Application-The platelet rich or platelet poor fractions were applied simultaneously with a mixture of 1000 units of thrombin per 1ml of 10% calcium chloride solution during surgical closure at the chest and leg wound site.

Data Analysis-Categorical values were evaluated with χ^2 analysis. Continuous values were evaluated with a student's t-test ($\alpha=0.05$).

Propensity scoring was done using observed covariates following reduction of selection bias.

RESULTS

Chest Wound-There was 1 (0.18%) case of chest infection (superficial) in the PRP group and 11 (1.98%) cases of chest infection in the control group. Postoperative drainage of the chest wound occurred in 3 (0.59%) of the PRP cases (0.59%) and 30 (5.39%) of the control cases.

Leg Wound- 541 PRP cases and 445 control cases required saphenous vein harvest. There were 0 PRP and 3 (0.66%) control cases with postoperative leg wound infection.

Postoperative drainage of the leg wound was seen in 59 (10.91%) of the PRP cases and 208 (45.79%) of the control cases.

Propensity Scoring- Propensity scores were generated and used to produce odds ratios for the outcome measures. It was concluded that PRP application reduced the likelihood of sternal infection by 93%, the likelihood of sternal drainage by 96%, and the likelihood of leg wound drainage by 88% compared to the control group.

CONCLUSIONS

The analysis of this retrospective case series demonstrated a significant reduction in the likelihood of wound disturbances of the chest and leg when PRP and PPP were applied during surgical closure following a CABG. No adverse events related to this therapy were noted. Further investigation into autologous blood products as surgical adjunct during cardiothoracic procedures is warranted.

REFERENCES

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