

# Anaesthetic Management of Patient with Distal Radius Fracture with Ipsilateral Arteriovenous Fistula

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## Abstract

**Introduction:** Patient with upper limb fracture with ipsilateral limb AV fistula, anaesthetic options are still challenging.

**Case Report:** A 40 year old male patient who is an K/C/O CKD on maintenance hemodialysis and hypertensive on medication. Patient had AV fistula on the same side of the fracture, Detailed examination of the fistula was done, 1. Thrill over the fistula palpated. 2. Bruit was auscultated on the fistula side. 3. Radial pulse was palpated for volume and rhythm. 4. Fistula hand was compared with other hand for colour, any cyanosis or pallor, temperature, ulcer, edema, pigmentation or peeling of the skin and Nicoladoni Branham sign was negative Under USG, plexus was identified. Using 23G spinal needle, Bupivacaine 0.5(H) 15ml[75mg] + LOX 2% with adrenaline 10ml [200mg+50µg] + Dexona 8mg was given in and around the plexus. Post supraclavicular block, both sensory and motor blockade was checked. Without tourniquet surgery was proceeded, face mask with 5L/min of O<sub>2</sub> was given to the patient. Intraoperatively patient was hemodynamically stable, maintenance fluid of 0.5ml/kg/hr. Post procedure examination of AV fistula was repeated to check the patency.

**Conclusion:** Use of regional anaesthesia over general anaesthesia in distal end fracture with ipsilateral AV fistula has advantage in both in management and patency of the AV fistula.

**Keywords:** Arteriovenous fistula; Brachial plexus block; Radius fracture.

## How to cite this article:

Balaji J, Ravi Madhusudhana/Anaesthetic Management of Patient with Distal Radius Fracture with Ipsilateral Arteriovenous Fistula/Indian J Anesth Analg. 2021; 8(4): 439-440.

## Introduction

Upper limb surgery are commonly performed under regional anaesthesia, with the help of USG. Nerve Blocks are relatively easy with high degree of reliability and safe option. They provide good intraoperative stability and good post operative analgesia.

Patient with upper limb fracture with ipsilateral limb AV fistula, anaesthetic options are still challenging because of hyper vascularity, haemorrhage, contraindication of using tourniquet or failure of AV fistula, intraoperative fluid management, recovery from general anesthesia and avoidance of nephrotoxic drugs.

In this case report, we have discussed about

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the anaesthetic concerns in CKD patient with AV fistula and outcome of regional anaesthesia in case upper limb fracture with ipsilateral AV fistula.

### Case Report

A 40 year old male patient who is an K/C/O CKD on maintenance hemodialysis and hypertensive on medication, had an RTA and presented to hospital with pain and swelling over distal forearm, X ray showed distal end both bone fracture. Patient had AV fistula on the same side of the fracture. After admitting to the hospital, Blood investigation was sent, which showed elevated Renal function test, Nephrology opinion was taken, hemodialysis was done, On pre anaesthetic evaluation, his heart rate - 114 bpm; blood pressure was 160/100 mm Hg, all routine blood investigation were done, ECG showed normal rhythm and patient was tested negative for Covid pneumonia, history of input and output was documented.

Detailed examination of the fistula was done, 1. Thrill over the fistula palpated. 2. Bruit was auscultated on the fistula side. 3. Radial pulse was palpated for volume and rhythm. 4. Fistula hand was compared with other hand for colour, any cyanosis or pallor, temperature, ulcer, edema, pigmentation or peeling of the skin and Nicoladoni Branham sign was negative.

Patient was shifted to OT with 18G IV cannula on the opposite hand and connected to monitors. Parts were prepared and draped, under USG plexus was identified. Using 23G spinal needle, Bupivacaine 0.5(H) 15ml[75mg] + LOX 2% with adrenaline 10ml [200mg+50µg]+ Dexona 8mg was given in and around the plexus. Post supraclavicular block, both sensory and motor blockade was checked. Without tourniquet surgery was proceeded, face mask with 5L/min O<sub>2</sub> was given to the patient. Intraoperative patient was hemodynamically stable, maintenance fluid of 0.5ml/kg/hr. Post procedure examination of AV fistula was repeated to check the patency, Both motor and sensory blockade was checked.

### Discussion

Safe and effective anaesthetic management starts with detailed comprehensive preoperative evaluation. If risks identified, measures should be taken to optimize the patient and to eliminate or reduce the risk of surgery. Additionally patient should be instructed to schedule hemodialysis the day prior to the surgery.<sup>4,5</sup> Basic laboratory test including CBC, RFT, S. electrolyte and coagulation profile should be taken. Input and output should be recorded, if any recent fall suggestive of worsening

of renal function. They may have chronic anemia due to low erythropoietin activity and coagulation profile might be altered due to platelet dysfunction.<sup>5</sup>

Almost all patients with CKD have multiple co morbid risk factor for general anesthesia, for that reason GA is avoided when ever possible but this may be feasible. Placing endotracheal tube over LMA have advantage in more secure airway and resulting in minimal aspiration, avoiding alkalosis that can contribute to low potassium.<sup>1</sup>

Using LMA has an additional advantage of not using muscle relaxants which can delay emergence from GA. During induction, haemodynamics should be maintained, but blood pressure drops after induction due to lower vascular compliance and lower cardiac reserve function.<sup>1</sup>

When tourniquet is not used, haemorrhage can be controlled using adequate electrocoagulation. Thrombosis is one of the common cause of failure of AVF followed by infection.<sup>2</sup> So in addition to general post operative care of distal radial fracture, condition of the AVF should be closely observed.

### Conclusion

Use of regional anaesthesia over general anaesthesia in distal end fracture with ipsilateral AV fistula has advantage in both in management and patency of the AV fistula.

Conflicts of interest: nil

### References

1. Jorgensen, Matthew S et al. "The Role of Regional versus General Anesthesia on Arteriovenous Fistula and Graft Outcomes: A Single-Institution Experience and Literature Review." *Annals of vascular surgery* vol. 62 (2020): 287-294. doi:10.1016/j.avsg.2019.05.016.
2. Chang, HM., Chou, YC., Jou, IM. et al. Clinical outcomes in distal radial fractures with ipsilateral arteriovenous fistulas. *J OrthopSurg Res* 14, 143 (2019).
3. Sousa, Clemente Neves et al. "Physical examination: how to examine the arm with arteriovenous fistula." *Hemodialysis international. International Symposium on Home Hemodialysis* vol. 17,2 (2013): 300-6. doi:10.1111/j.1542-4758.2012.00714.x.
4. Tom Bradley, MB ChB FRCA, Thomas Teare, MB ChB FRCA, Quentin Milner, MB ChB FRCA, Anaesthetic management of patients requiring vascular access surgery for renal dialysis, *BJA Education*, Volume 17, Issue 8, August 2017, Pages 269-274.
5. *Methodist Debakey Cardiovasc J.* 2015 Jul-Sep; 11(3): 197. doi: 10.14797/mdcj-11-3-197.