# Perioperative Management of a Patient With Wolff-Parkinson-White Syndrome Undergoing Thyroidectomy With Bilateral Modified Neck Dissection and the Role of Dexmedetomidine: A Case Report

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## BACKGROUND

Wolff-Parkinson-White (WPW) syndrome is characterized by the presence of an accessory conduction pathway in the heart, predisposing patients to tachyarrhythmias and sudden cardiac death. **The perioperative management of these patients poses a significant challenge to the anesthetist due to the increased risk of arrhythmias, particularly under anesthetic and surgical stress.**

We report the successful perioperative management of a patient with WPW syndrome undergoing thyroidectomy with bilateral modified neck dissection.

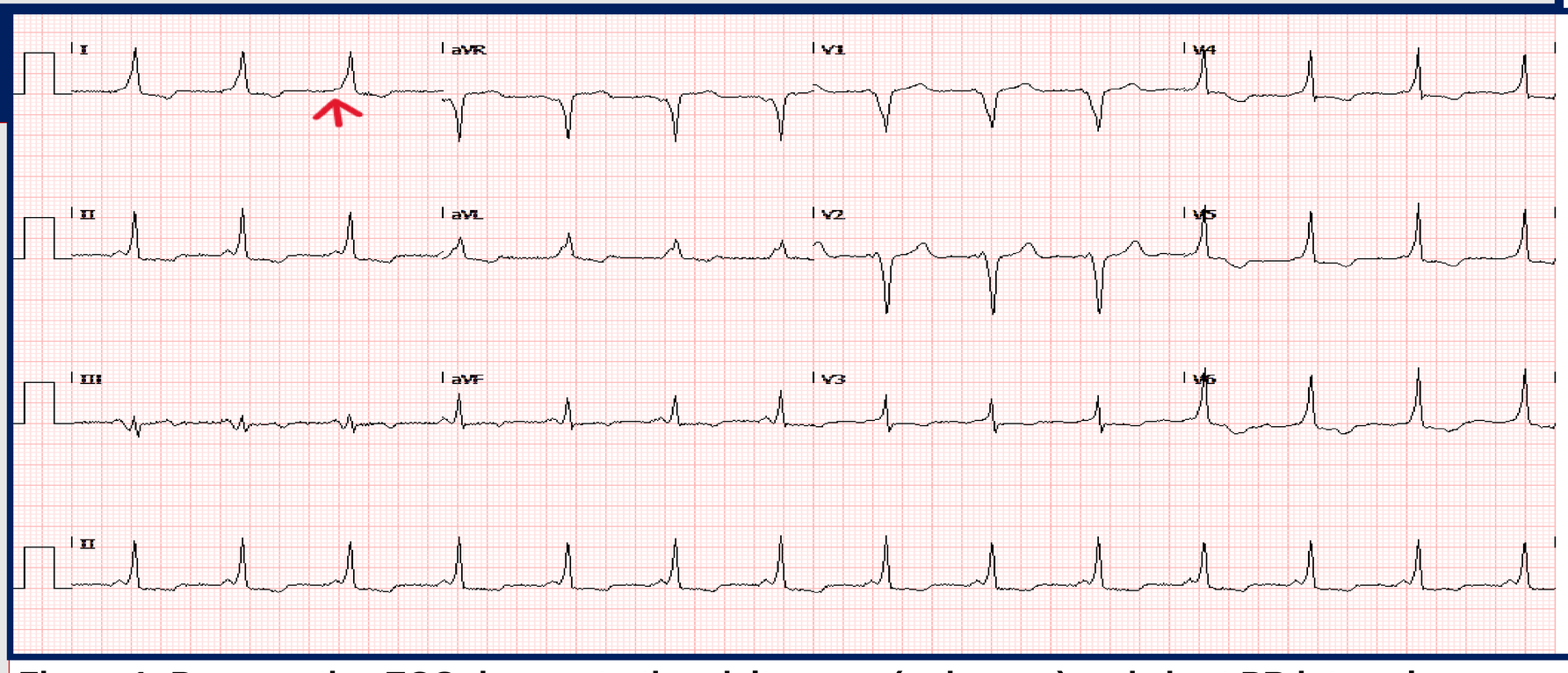


**Figure 1: Preoperative ECG demonstrating delta wave (red arrow) and short PR interval.**

## CASE PRESENTATION

- A 36-year-old female, ASA II with no comorbidities, diagnosed with medullary thyroid carcinoma was scheduled for total thyroidectomy with bilateral modified neck dissection.
- Airway assessment revealed a Mallampati score of II, with adequate mouth opening and neck extension.
- ECG showed short PR interval, delta waves and associated ST-T changes leading to the incidental diagnosis of WPW syndrome (Figure *1*).
- Echocardiogram revealed a normal study with an ejection fraction of 63%.
- Magnetic resonance imaging of the neck, showed mild tracheal displacement to the right (Figure *2)*.
- All other lab investigations including thyroid function tests were normal.
- The cardiologist deemed no treatment necessary for the patient preoperatively, owing to the asymptomatic nature of her pathology. However, postoperative follow-up in the cardiology clinic was planned.

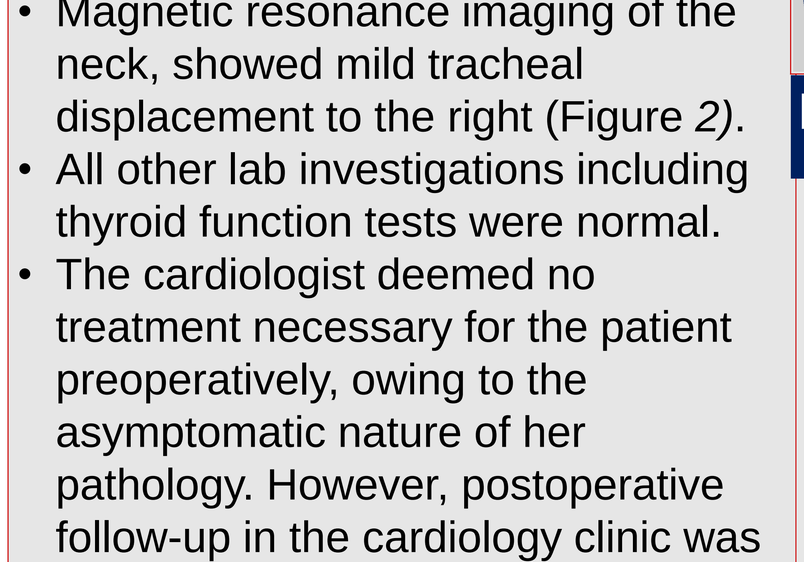

***Figure 2: MRI Neck without contrast (axial view) demonstrating multiple hyperintense nodules, predominantly in the left lobe and isthmus of the thyroid gland, as illustrated by the arrow and mild tracheal displacement towards the right.***

**Primary objective of Anesthetic Management:**
To minimize sympathetic stimulation throughout the perioperative period by addressing factors such as anxiety, pain, hypovolemia, a light plane of anesthesia, and the stress response associated with intubation and extubation

- Drugs and defibrillator pre-arranged in OR for prompt management of any arrhythmia.
- Before surgical incision, **dexmedetomidine infusion started** at a rate of 0.6 mcg/kg/hour.
- Closed-loop communication maintained with the surgeons.

**DEXMEDETOMIDINE**

Sedative

Analgesic

Anti-arrhythmic

**Induction**

IV propofol 150 mg

muscle paralysis achieved with atracurium 40 mg

airway secured with a reinforced endotracheal tube of size 7.0 mm internal diameter

At induction, there was a mild, transient increase in the heart rate and blood pressure of the patient, with no changes in ECG. This settled without any intervention.

**Maintenance**

A good depth of Anesthesia (MAC of sevoflurane ≥ 0.8) maintained with oxygen, sevoflurane, and atracurium 6 mg as required.

**Extubation**

deep extubation carried out after confirming complete reversal of neuromuscular blockade with the help of a peripheral nerve stimulator.

The airway was secured with a laryngeal mask airway until the patient was fully awake, after which it was removed as well

## POSTOPERATIVE COURSE:

- Patient shifted to PACU with strict monitoring of hemodynamic parameters, especially heart rate and rhythm.
- The subsequent course of recovery was uneventful, and the patient was discharged four days later.

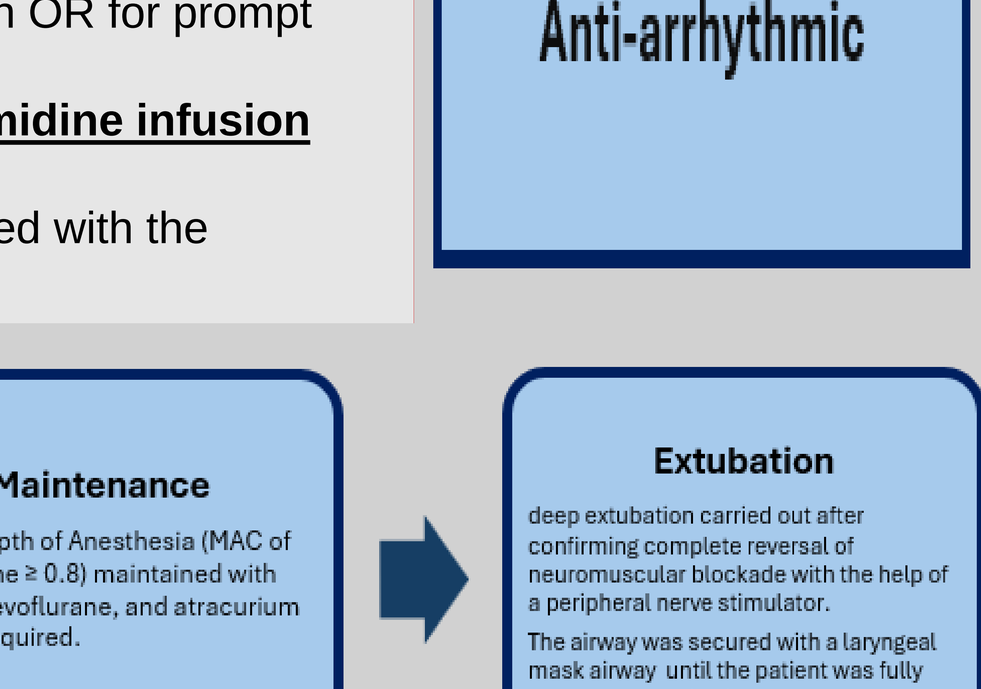


***Figure 3: Intraoperative Monitoring of the Patient showing stable hemodynamics.***

## CONCLUSION

- Patients with conduction abnormalities can be managed effectively when there is a thorough understanding of the underlying condition, the type of surgery, and the anesthetic plan.
- The use of dexmedetomidine, an alpha-2 agonist, was a novel approach associated with favorable outcomes in this case. However, further research is required to validate its effectiveness.