

## Case Report

# Drop foot Post Mitral Valve Replacement and Total correction of Tetralogy of Fallot: A Two Case Report

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## Abstract

**Background:** Peripheral nerve lesion after heart surgery was reported on brachial plexus, phrenic nerve, laryngeal recurrent nerve facial nerve, lumbosacral root and spinal cord. Incidence of peroneal communis nerve lesion after heart surgery was not much reported (0,19%). Diagnostic procedure of peripheral nerve lesion are including clinical sign and symptom, electrophysiology studies and MRI. Rehabilitation management of peripheral nerve lesion are not only management of pain and nerve stimulation, but also walking aid beside cardiac rehabilitation due to cardiac problem.

**Methods:** Reporting two case of peripheral nerve lesion after heart surgery. First case is a female, 37 years old suffered from drop foot two days after mitral valve replacement with mechanic valve. She got pain management, electrical nerve stimulation and therapeutic exercise beside cardiac rehabilitation program. Second case is a female, 9 years old, after total correction of Tetralogy of Fallot, got drop foot at day two. She also got pain management, electrical nerve stimulation and therapeutic exercise beside cardiac rehabilitation.

**Results:** First case result was the drop foot getting better after she entered phase two of cardiac rehabilitation. In the second case, the drop foot was relieved at phase two cardiac rehabilitation and back to normal condition after one year after surgery.

**Conclusion:** In these two case of drop foot after heart surgery, the drop foot was relieved after pain and rehabilitation management beside cardiac rehabilitation.

**Keywords:** *drop foot, post mitral valve replacement, post total correction of tetralogy of fallot, tetralogy of fallot*

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## Introduction

Heart surgery as one of the heart disease management has known its benefit to improve life expectancy of the patient, although some complication after surgery at cardiovascular or another organ system still has the chance to be appeared. One of the complication is peripheral nerve lesion that could limit the patient's quality of life.<sup>1</sup> The

American Society of Anesthesiologist stated that nerve lesion occurred 16% among the heart surgery complication, the most frequent at ulnar nerve (28%), Brachial Plexus (20%), Lumbosacral root (16%) and peroneal communis nerve lesion (0.19%).<sup>2,3</sup> Electrophysiology study is one of the supporting examination to established the

peripheral nerve lesion diagnostic beside Magnetic resonance imaging (MRI), that could lead the therapeutic management to overcome these complication.<sup>4</sup> Neuro-rehabilitation management is one of the treatment to solve the complication beside the cardiac rehabilitation that contribute to improvement of patient's quality of life.<sup>5</sup>

### Case Report

First patient was a woman, 37 years old, housewife, has weakness on the muscle that innervating of common peroneal nerve at day 3 after mitral valve replacement surgery without pain at ankle.

Second patient was a girl, 9 years old, 3<sup>rd</sup> grade of elementary school, with total correction of Tetralogy of Fallot, has weakness on muscles that innervated by Superficial peroneal and Tibial nerve at day 2 after surgery.

### Discussion

Recent years, peripheral nerve lesion were reported as one of heart surgery complication. Chunhong *et al.* found that during 36 months, there were 11 cases of 581 patient had this complication after congenital heart disease surgery correction, valve surgery and coronary bypass grafting (CABG) with sternotomy.<sup>6</sup> The sign were continued pain, motoric and sensoric disorder. Fortunately, these complications were subsided with or without special treatment after some period.

Predicted factors that could triggering the complication was patient's position during surgery including compression or overstretch in peripheral nerve location causing ischemia. Another theory said that metabolic disorder such as Diabetes Mellitus also underweight is one of the reason that etiology leading peripheral nerve lesion. Prolonged duration of surgery could increasing severity of systemic ischemia.<sup>7</sup> Budillon *et al.* studied that

Saphenus nerve lesion after CABG were subsided in 2 months with proper management including neuro-rehabilitation management.<sup>8</sup> The sign of pain and hypoesthesia limit ambulation of the patient that consider as surgery consequences, not complications, so it could overlooked when following up the post surgery condition.

First patient with post mitral valve replacement has weakness on the muscle that innervating of common peroneal nerve at day 3 after surgery without pain at ankle. There was no prolonged duration of surgery and trouble during surgery. Patient positioned in supine, leg in slight flexion that could compress peroneal nerve. Other risk factor is thrombus at right atrium that could obstruct Peroneal nerve area, if thrombus quit of.

Second patient with total correction of Tetralogy of Fallot has weakness on muscles that innervated by Superficial peroneal and Tibial nerve at day 2 after surgery. There was a prolonged duration of the surgery due to complexity of the abnormality condition. The patient also underweight that could increase the factor of nerve compression due to systemic ischemia. Both of the condition is similar with study by Setty *et al.*<sup>9</sup> There was no electrophysiology study in both patients because the risk was greater since both of the patient consume antithrombotic. Moreover, the improvement of the weakness was appear before 14 days with electrical stimulation and exercise of lower extremities.

Comprehensive rehabilitation management consist of decreasing pain, exercise at lower extremity, electrical stimulation and ankle foot orthoses (if needed) could help improving the patient condition in order to make the optimal quality of life.

## Conclusion

Peripheral nerve lesion in two case reported in this study, has the benefit to expand the knowledge about the possibility of heart surgery complication that could affect another organ system, in addition to cardiovascular system. The awareness of these possibility could prevent these complication that affect on convalescent condition of the patient after heart surgery. Comprehensive management including rehabilitation could help the patient simultaneously.

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