# INTRODUCTION

- Left ventricular assist devices (LVAD’s) are implanted as a “bridging therapy” or a “destination therapy” for patients with end-stage heart failure.
- It is a mechanical device used to partially or completely reduce the workload of the left ventricle.
- After long-term use, it results in significantly meaningful changes in quality of life.
- Most patients who undergo implantations of LVAD’s are transferred to a rehabilitation unit and have significant comorbidities, are severely deconditioned, and have associated skeletal myopathy.

# PURPOSE/ OBJECTIVES

- Present three case studies on the effectiveness of implantation of an LVAD for end stage heart failure.

# PROTOCOL

Rehabilitation Protocol:
- 10-day rehabilitation protocol
- Consultation is initiated within the first postoperative day
- Physical therapy initiated when patient is stable
- Initial Evaluation: bed mobility, cognitive screening, and active assisted range of motion
- Day 2: fine and gross motor
- Day 3-10: patient progresses with functional activities
- FIM scored upon admission and upon discharge.

# RESULTS

## Case 1
- 51 yo male with LVAD implanted with CHF and ventricular arrhythmia
- admitted to rehab unit on post op day 21
- rehabilitation consisted of muscle strengthening, progressive ambulation, and ADL training
- FIM admission score was 76, improved to 108
- Ambulation improved from 150 feet with rolling walker with supervision to 500 feet independently
- D/C home after 7 days and died 2 months later due to spontaneous intracranial hemorrhage

## Case 2
- 75 yo male with LVAD implanted for ischemic cardiomyopathy, complicated by gastrointestinal bleeding
- admitted to rehab on post op day 38
- admission FIM: 66, d/c FIM: 84
- D/C after 18 days, survived for 7 mo, died during a CHF exacerbation

## Case 3
- 62 yo male with LVAD implanted for dilated cardiomyopathy
- admitted to rehab unit on post op day 28
- admission FIM: 67, D/C FIM: 98
- D/C home after 9 days, survived 21 days, died of spontaneous intracranial hemorrhage

# DISCUSSION

- An LVAD consists of:
  - blood pump
  - percutaneous lead
  - system controller
  - external power source
- Medical complications may include:
  - thrombotic events, bleeding, arrhythmias, infections, depression, and device malfunction.
- Common findings:
  - Deconditioning from muscle disuse and atrophy
  - Therapy is similar to other patients who are chronically debilitated.
  - Patient survival is up to 1-2 years.
  - The most common causes of death are sepsis and device failure.
  - Two of the three patients studied here died of spontaneous intracranial hemorrhage, while the third died of CHF exacerbation.
  - The newer generation LVADs, which use continuous flow technology, may no longer require anticoagulation which may reduce this risk.
  - The added independence and functional gains that patients with an LVAD obtain during the rehabilitation stay may allow for a better quality of life.

# CLINICAL SIGNIFICANCE

- Physical therapists can work with patients to improve quality of living in this patient population as they work to return home.
- Relevance to physical therapy is very clear:
  - Comorbidities and skeletal myopathy are common with this patient population
  - Prolonged assistance needed with ADL’s and functional tasks.

# CONCLUSION

- Patients requiring LVADs can improve their overall QOL using this device as a destination therapy.
- The majority of patients with an LVAD can be D/C home with nursing and physical therapy services
- Patients with complex presentations may benefit from a short inpatient rehabilitation stay
- Each patient’s FIM score increased significantly during their rehabilitation stay

# SUMMARY

- Each article agrees that the LVAD is effective for improving quality of life, therefore we believe that this device would be beneficial for patients with end stage heart failure.

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