

Responses to reviewers

Reviewer 2861195

English language errors are so important as to distort the sense of many phrases. The manuscript most certainly warrants thorough English language revision.

English was checked with native speakers.

It is not clear why the patient had iliac artery occlusion; were these occlusions bilateral?

The patient had bilateral chronic occlusion due to atherosclerotic disease. This information was added to the manuscript.

For a Journal of Clinical Case reports, this is quite a specific subject to deal with. In my personal opinion, such a case report might best be suit for a cardiosurgical journal.

The number of patients who have a left ventricular assist device is increasing. Although this complication was treated surgically, clinicians other than cardiac surgeons will encounter patients who have left ventricular assist device. This complication is not a rare complication and is associated with any left ventricular assist device other than the HeartMateII, and we think that there will be a benefit for physicians other than cardiac surgeons to know about this complication.

In any event, if it is to be considered apt for this present journal, certainly an explanation for readers should comprehend the HeartMate II pump components, the site of possible thrombosis, and other technical aspects much more in detail. This is important because otherwise readers who are not familiar with such a specific device and its possible complications will probably not derive any benefit from reading the manuscript.

We added a brief summary of the HeartMateII. The site of the possible thrombosis is written in the introduction. "Hemolysis related to the LVAD could be due to kinking of the outflow graft, malposition of the inflow cannula, or malfunction of the pump."

This being an extremely specific situation (which will be encountered by few clinicians) its applicability is limited. Rather than an anecdotal case report, the manuscript could benefit from being reorganized in such a way that: a) first, the specific aspects of the device, its components, and its function are introduced properly

We believe that left ventricular assist device related thrombus and hemolysis is not a rare complication. The patient responded well to the surgery and the images have a great value for education. We added a brief summary of the HeartMate II.

b) the adequacy, sensibility and specificity of CT scan in evaluating the presence of thrombosis within the device,

CT scan has limited ability to diagnose the thrombosis within the LVAD housing, due to artifact caused by the metallic components of the LVAD. This information was added to the manuscript.

c) the different clinical complications that can occur (briefly) and their possible clinical manifestations.

The potential complications are infection, thrombosis, bleeding, and this was added to the introduction.

In this context, subsequently, the value of urine coloration as a clinical sign can be discussed. The Authors are requested to provide information on reasons why echocardiography and CT scan might misdiagnose a thrombus within the device.

Artifacts caused by the housing of the LVAD will make it difficult if not impossible to identify a thrombus within the housing.

The thrombus presented in Figure 2 is described to be attached along the inlet stator. Further information on this part of the device is warranted (e.i. what material is it made of, what are the risk factors for thrombosis development in this specific place, for instance, special turbulent flow, thrombogenic surface, etc, and what are other possible sites of thrombosis (with the respective percentage of events occurring for each part of the device).

This is not focus on this paper. The detail of the HeartMate II LVAD is available from the company, Thoratec, Pleasanton, CA. In addition to that the incidence of the thrombosis is clear written in the discussion section “Thrombosis of the left ventricular assist device (LVAD) is a potentially lethal complication which occurs in 2 to 3% of the patients who receive the HeartMate II LVAD and the incidence is reported to be increasing.”

Although a case report obviously has space constraints, a more complete discussion of what the possible “medical management” is could be incorporated, and the indications for performing surgery (with pump substitution) vs attempting medical management.

The medical management includes increase anti-platelet agents such as dipyridamole, clopidogrel, and high dose of aspirin or increase the goal INR for anticoagulation. The sentence was revised.

Was the thrombus analyzed histologically?

No

Was there any sign of infection? Was infection excluded?

There were no signs of infection. A sentence was added in the second paragraph of the case report.

What was the patient’s follow up (months?)

Information was added in the last sentence of the case report.

Further morbidity?

There were no further morbidities.

What was the reason for the sub-anticoagulation (INR of 1.7 upon arrival?)

No reason for the subtherapeutic INR was identified.

Furthermore, an explanation of what is meant by such technical specificities as “elevation in the pump power” is warranted.

Pump power is a number that shows the direct measurement of motor voltage and current. Changes in pump speed, flow, or physiological demand can affect the power. Increase in the pump power may suggest a thrombus within the pump. An explanation was added.

No information is provided regarding the etiology of heart failure (also considering that the patient is relatively young).

It was ischemic cardiomyopathy.

No information is provided regarding the risk factors for thrombosis of the device.

There was no apparent risk factor for developing thrombosis. A sentence was added “The preoperative hematology work-up disclosed no evidence of hypercoagulability.”

The figures are appealing, as they greatly illustrate the clinical case.

Thank you for your comments.

Reviewer 2744926

The authors submitted a case report on “Resolution of hemolysis from pump thrombus during left ventricular assist device exchange. .” Although this is an interesting case, there are several major issues with the manuscript.

(1) They need to provide more information about Echocardiography findings? LVAD inflow/outflow Velocities, color flow pattern, and Doppler flow profile? They need to add a picture showing the inflow Doppler profile.

The information was added in the second paragraph of the case report. The inflow Doppler findings were not significant, so a picture was not added.

(2) It is not clear if TEE was done? TEE should have been done to evaluate LVAD malfunction, if so what were the findings.

TEE was not done until surgery. However, it was negative.

(3) Just showing changes in urine color is not enough, they need to add Urine-analysis.

Urine analysis data was added in the revised paper. Please refer to the second paragraph of the case report.

(4) No laboratory data has been shown anywhere in the manuscript documenting the resolution of the hemolysis (post LVAD exchange).

LDH was improved. The information was added the 3rd paragraph of the case report.

(5) They need to add a table showing baseline (before hemolysis) labs i.e. CBC/bilirubin/Retic count/LDH/UA/haptoglobin/free plasma hemoglobin, during the hemolysis and post LVAD exchange(when the hemolysis resolved)

A table was added to help understand the trends of the laboratory values.

(6) There are spelling errors (for example, under case report in the 3rd paragraph) and extra spaces (between words) throughout the manuscript.

All spelling errors were double checked with native speakers.

(7) Why this patient developed LVAD thrombosis and what measures was taken to prevent after placement the second LVAD. Do we know how the patient doing after few months ?

The reason for developing a thrombus was unclear. After the pump exchange, we increased the antiplatelet drugs. The patient had a heart transplant 2months later. This was added to the manuscript.

(8) The discussion about the echo (under discussion section) is very superficial in its content, and does not advance the reader's understanding of this topic.

The echo findings are not the focus of our paper, so we kept it simple. Echo findings are discussed in detail in reference 6, 7, and 8.

Reviewer 211908

The manuscript of this case report is well written and well organized. The case report presented reflects a complication of LVAD treated surgically.

Thank you for the comment.