# Prone position pressure ulcers:
# A retrospective analysis of two different prone positions used in a district general intensive care unit during the initial Covid-19 pandemic.

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## Introduction

Pressure ulcers are a serious complication of prone positioning, nearly twice is common as in supine patients.(1) They lead to infective complications and a poorer overall prognosis for those affected.(3) Major risk factors are immobility with prolonged pressure and force being exerted.(2) Prone positioning exposes thin facial tissue to excessive shear forces resulting in increased ulcerations.(1)

During the first wave of the Covid-19 pandemic we saw a dramatic increase in the need to prone patients affected by SARS-Cov2. As a result we also saw a large rise in the number of pressure ulcers. On May 1st our ICU switched from using a face cushion as head support to using the swimmers position in an attempt to reduce pressure ulcer rates.

Given the growing concerns of a second wave we retrospectively assessed ulcer rates to see if ulcers were reduced following the implementation of swimmers position.

## Methods

The significant incident report forms for ICU from March 9th to June 15th were collected. Any incident not relating to ulcerations or in patients who had not been proned was excluded.

Using with the ICU medical notes we collected information on cause of ulcer, patient demographics, ulcer severity and proning strategy.
Patients were split into two groups: group 1 - those proned using the face cushion (before May 1st) and group 2 - those proned using swimmers position (after (May 1st). The results were analysed using a Fisher's exact test to obtain the p-values given the small sample size.

## Results

Patients in both groups were of a similar mean age (62 years group 1 & 64 years group 2) and BMI (32 vs 31). Group 1 had an even male/female distribution, whilst group 2 was all male.

Patients were proned on average twice in both groups. Group 2 on average were proned 17 hours longer (45.4 hours vs 62.2 hours) per episode and 31 hours longer overall (83.2 hours and 112 hours).

A total of 15 ulcers were identified - two thirds of which were severe. Seven of these were attributed to patient positioning, six related to tube ties and two related to NG tubes.



Figure 1. Hours prone to develop a tube tie or proning related ulcer using a face cushion (striped) or swimmers position (solid).
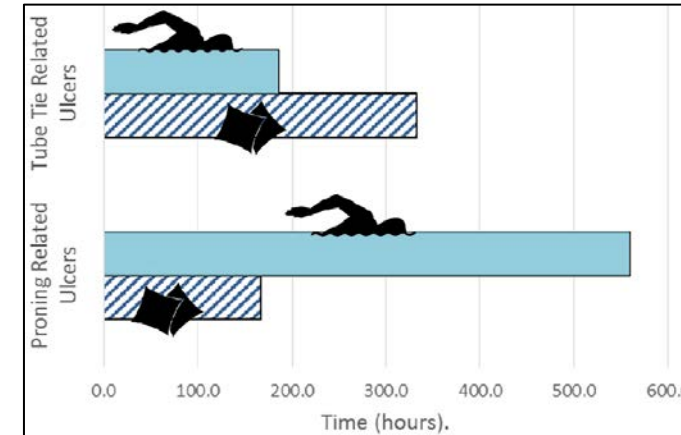
Position related ulcers occurred every 166 hours prone in group 1 compared with every 560 hours in group 2.

Ulcer to patient ratio was 0.5 in group 1 and 0.2 in group 2 (p = 0.34).

Tube tie related ulcerations were more frequent in group 2 (333 hours prone vs 187 hours prone).

Ulcer to patient ratio of 0.25 in group 1 against 0.6 in group 2 (p = 0.28).

## Discussion

The use of face cushion appears to be associated with an increased risk of developing pressure ulcers compared to swimmers position. However this result is not statistically significant.

Group 2 were more affected by the tube tie related ulcers, possibly due to the longer periods prone and subsequent facial oedema causing shear forces on the tie.

We recommend the use of the swimmers position with regular repositioning of the arms and face and careful attention to tube ties in these patients.

The sample size was quite small with only 17 patients included in the results. Therefore we aim to increase strength of our study by reaching out to other centres.

## References

1. The impact of patient positioning on pressure ulcers in patients with severe ARDS: results from a multicentre randomised trial on prone positioning, *Intensive Care Medicine.*

2. Protecting prone positioned patients from facial pressure ulcers using prophylactic dressings: A timely biomechanical analysis in the context of the Covi-19 pandemic. *International Wound Journal.*

3. Pressure Ulcer, *BMJ Best Practice*