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## Background:

- Autologous reconstruction with the deep inferior epigastric perforator (DIEP) flap is the gold standard for breast reconstruction in patients with radiation.
- Microsurgery, utilized for vessel anastomosis in the DIEP flap procedure is highly effective:
- Associated with up to 97% success rate. However, in patients in hypercoagulable states success drops to 85%.
- Possible causes of free flap failure include vascular occlusion, prolonged ischemia time, and pedicle revision.
- Not included in the commonly used risk assessment scores is **COVID-19 infection or vaccination**.
- Research suggests Increased risk of vasculitis, microvascular thrombi, and thromboembolic events in patients with complications of SARS-CoV-2.
- Research is mixed regarding the effects of COVID-19 vaccinations on hyper-thrombotic events and complications of microvascular surgery.

## Methods:

- IRB review was conducted of women undergoing autologous breast reconstruction between January 2019 and March 2022.
- Patient history and postoperative complications were collected.
- Patients were divided into 3 cohorts based on date of surgery and history of infection or vaccine.

## Results:

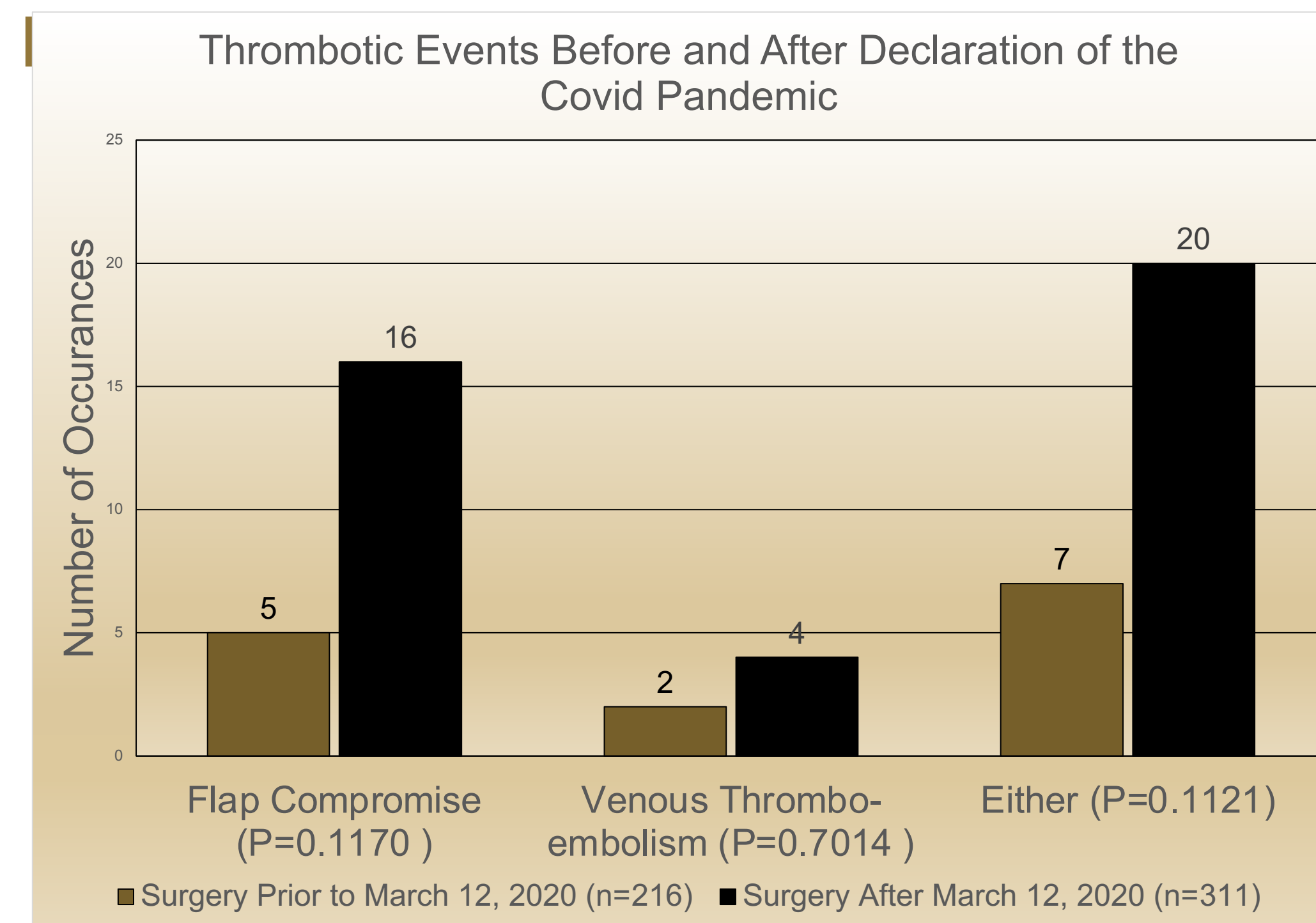


Figure 1

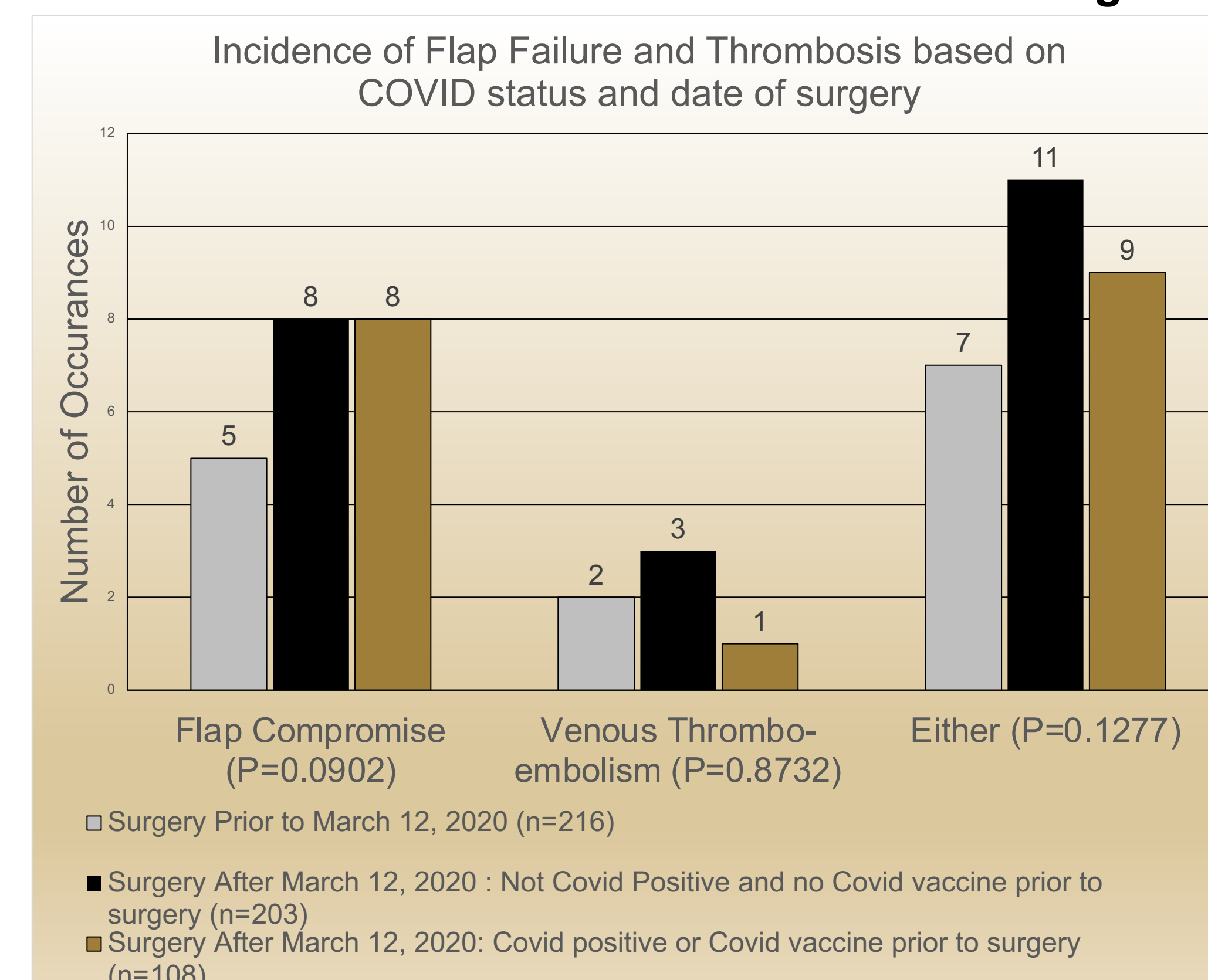


Figure 2

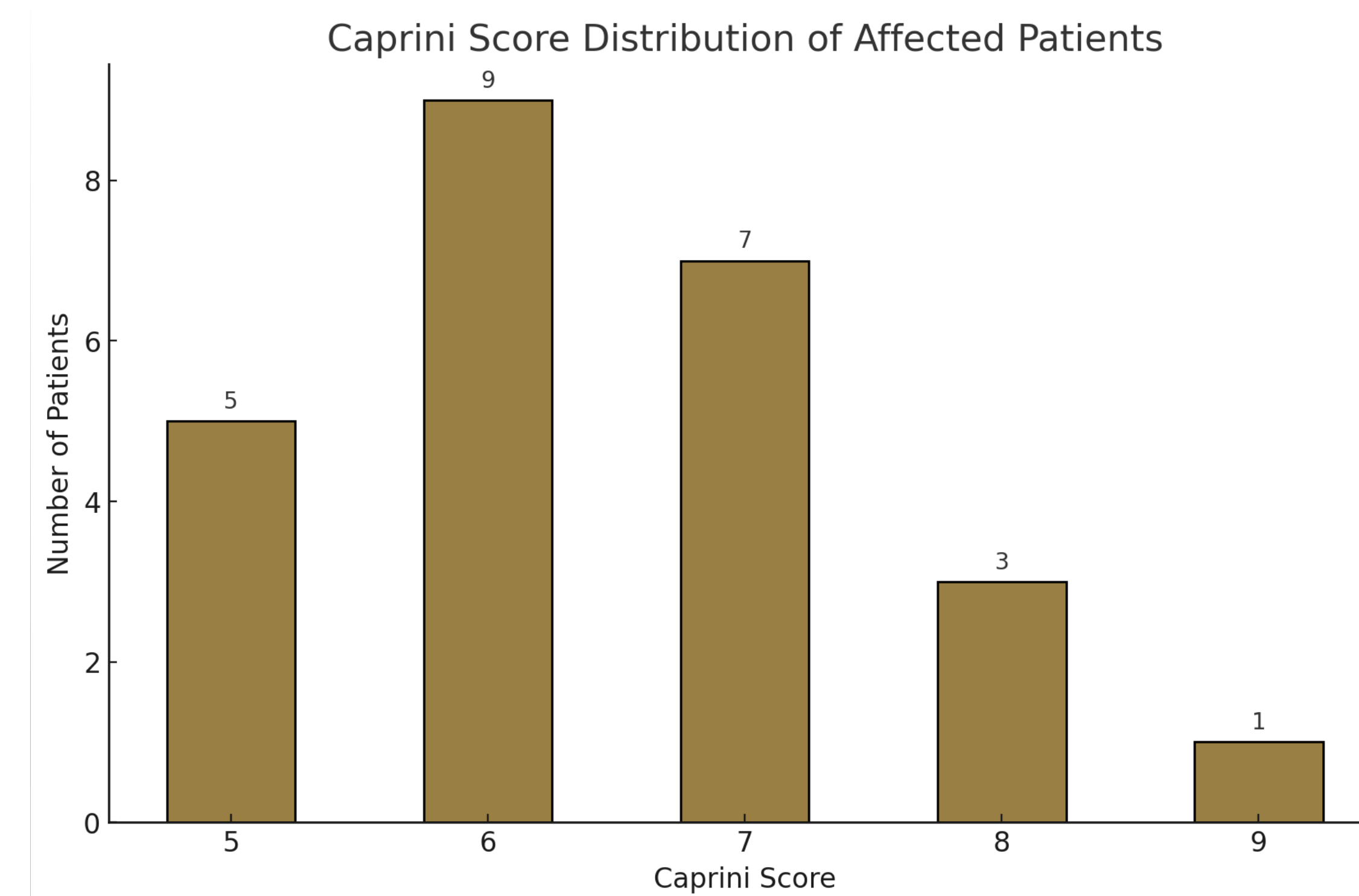


**Figure 3:** Distribution of Caprini Scores in 25 of the 27 total patients who experienced VTE post-surgery. This histogram illustrates the spread of Caprini scores, which are used to assess the risk of VTE in patients. Scores range from 5 to 9, with a score of 6 occurring most frequently.

The mean Caprini score among patients experiencing VTE post-surgery is 6.44, closely aligning with the mode and median, which are both 6. This suggests a consistent risk profile in the majority of affected patients and may indicate that a Caprini score of 6 is particularly prevalent when considering operative and demographic statistics for patients undergoing oncologic breast reconstruction.

|                                                                            | Flap Compromise<br>(P=0.0902) | Venous Thrombo-embolism<br>(P=0.8732) | Either<br>(P=0.1277) |
|----------------------------------------------------------------------------|-------------------------------|---------------------------------------|----------------------|
| Surgery Prior to March 12, 2020 (n=216)                                    | 5 (2.3%)                      | 2 (0.9%)                              | 7 (3.2%)             |
| Surgery After March 12, 2020                                               |                               |                                       |                      |
| Not Covid Positive and no Covid vaccine prior to surgery (n=203)           | 8 (3.9%)                      | 3 (1.5%)                              | 11 (5.4%)            |
| Covid positive or Covid vaccine prior to surgery (n=108)                   | 8 (7.4%)                      | 1 (0.9%)                              | 9 (8.3%)             |
| If we combine all with no vaccine and no Covid, regardless of year (n=419) | P=0.0528                      | P=0.8153                              | P=0.1374             |

## Conclusion:

- Goals of microsurgery center around successful outcomes, which requires understanding and minimizing possible complications
- Based on our analysis, COVID-19 does not significantly increase the rates of thrombotic events (flap compromise or VTE) in DIEP flap breast reconstruction.