

Blood Pressure Challenge (BPC) Reduces Hematoma Complications In Gender-Affirming Chest Reconstruction: A Retrospective Chart Review of 119 Consecutive Patients

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PURPOSE

Postoperative complication rates for masculinizing gender-confirming chest reconstructions are between 11 and 33 percent. With this study, the authors investigate the effectiveness of using a blood pressure challenge, whereby the patient’s blood pressure is medically elevated intraoperatively to reveal potential bleeding vessels which can be addressed with additional hemostasis, to reduce postoperative complications with a particular interest in hematomas.

METHODS

Data Extraction

- A retrospective chart review of 119 consecutive patients who underwent masculinizing gender-confirming chest reconstructions over a six-year period by a single surgeon was conducted.
- Surgeries were separated into a control group that did not utilize a blood pressure challenge (BPC) and a group that did use a BPC.
- Demographics, surgical characteristics, and postoperative complications were compared between the two groups.

BPC Protocol

- A BPC was conducted prior to skin closure by administering vasoconstrictors to raise the patient’s SBP by 30 mmHg from the patient’s preoperative or anesthesia induction blood pressure.
- During this time, the surgeon evaluated the exposed tissue to locate injured vessels and applied appropriate hemostasis techniques prior to closing the incision.
- This same techniques of locating injured vessels and maintaining hemostasis were used for patients in the control group without medically elevating the patient’s blood pressure.

RESULTS

Table 1: Demographics and Comorbidities

		Control Group			BPC Group			p-value
		Mean	Standard Deviation	Percentage	Mean	Standard Deviation	Percentage	
Demographics	Age	25.46	8.56		24.36	6.13		0.42
	BMI	28.04	5.94		30.41	9.16		0.11
Pre-Operative Blood Pressure	Pre-Operative Systolic Blood Pressure (mmHg)	121.44	10.41		123.55	10.28		0.32
	Pre-Operative Diastolic Blood Pressure (mmHg)	75.14	8.944		75.05	9.09		0.59
Race	White			80.00%			82.61%	0.72
	Black			4.00%			1.45%	0.57
	Native Hawaiian or Other Pacific Islander			0.00%			2.90%	0.50
	Asian			2.00%			0.00%	0.42
	Other			14.00%			13.04%	0.88
Ethnicity	Hispanic			26.00%			16.00%	0.04
Psych Comorbidities	Depression			72.00%			76.81%	0.55
	Anxiety			66.00%			73.91%	0.35
	PTSD			10.00%			17.39%	0.26
	Bipolar Disorder			6.00%			7.25%	0.30
	Any Psych Condition			92.00%			89.86%	0.76
Other Comorbidities	Diabetes			0.00%			8.70%	0.04
	Hypertension			2.00%			7.25%	0.40
	Hyperlipidemia			10.00%			5.80%	0.49
	Renal Disease			0.00%			1.45%	1.00
	Connective Tissue Disease			2.00%			0.00%	0.42
Medications	Blood Thinner			0.00%			1.67%	1.00
	Testosterone			94.00%			91.30%	0.73
	NSAID			38.00%			24.64%	0.12
	Systemic Steroids			0.00%			4.35%	0.26

BPC = Blood Pressure Challenge

Table 2: Surgery Characteristics

	Control Group			Blood Pressure Challenge Group			p-value
	Percentage	Mean	Standard Deviation	Percentage	Mean	Standard Deviation	
Free Nipple Graft	58.00%			78.26%			0.02
Fasciocutaneous Flap	6.00%			4.35%			0.68
Amount of Breast Tissue Removed (g)		838.22	601.50		1087.29	930.50	0.13
EBL (mL)		57.00	44.47		52.25	44.96	0.57
Surgery Time (minutes)		184.00	56.06		168.00	44.31	0.10

Table 3: Blood Pressure Challenge Characteristics

		Percentage	Medication Dose	
			Mean	Standard Deviation
Medication	Phenylephrine	43.48%	373.5 mcg	260.1 mcg
	Phenylephrine & Ephedrine	52.17%	Phenylephrine: 473.91 mcg Ephedrine: 14.11 mg	Phenylephrine: 512.82 mcg Ephedrine: 6.89 mg
	Ephedrine	4.35%	25 mg	0 mg
		Mean	Standard Deviation	
Intra-Operative Blood Pressure Achieved	Systolic (mmHg)	154.74	18.15	
	Diastolic (mmHg)	90.72	19.87	

Figure 1: Surgical Approach

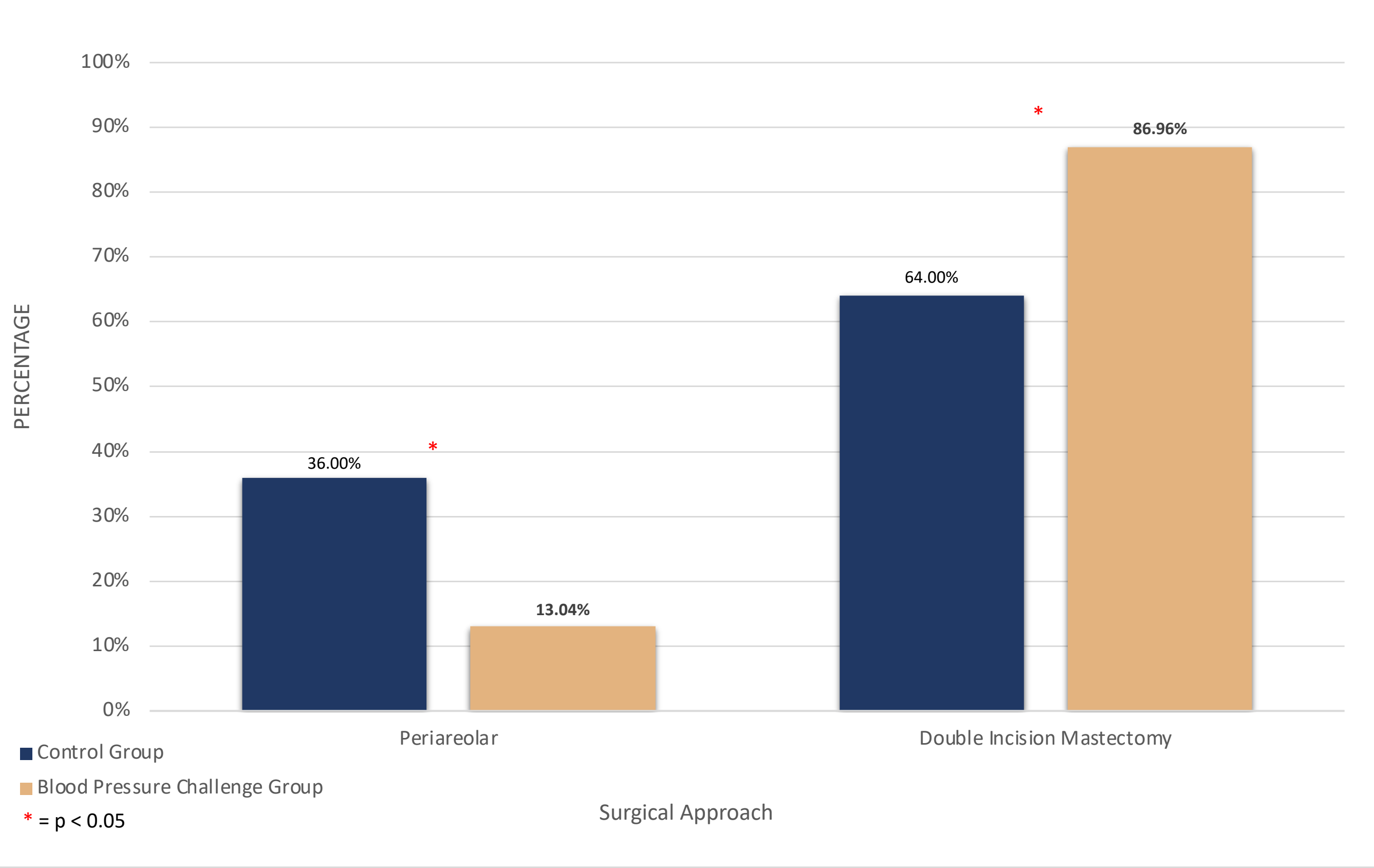
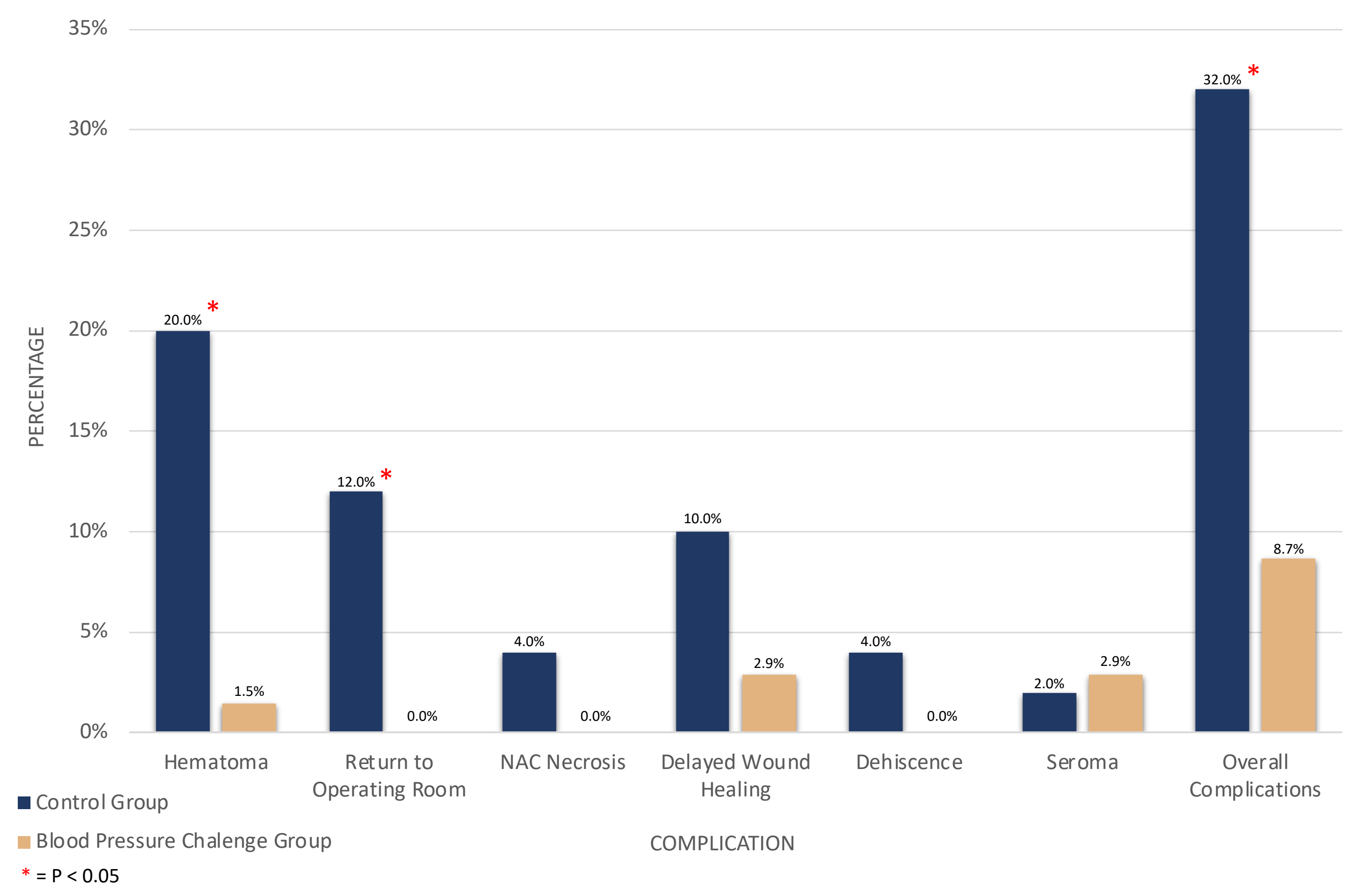


Figure 2: Postoperative Complications



RESULTS CONTINUED

Patient Demographics:

- No significant difference between control group and BPC group in terms of age, BMI, preoperative BP, race, psychological comorbidities, and perioperative medications.
- Comorbidities were similar between the two groups except there was a greater percentage of patients with diabetes in the BPC group (8.7%) compared to the control group (0%).

Surgery Characteristics and Surgical Approach:

- In the BPC group, there was a greater proportion of DIM and fewer periareolar approaches compared to the control group.
- There was a greater percentage of free nipple grafts in the BPC group compared to the control group.
- Amount of tissue removed, EBL, and surgery time were similar between the two groups.

Post-operative Complications:

- Hematoma rate was higher in the control group (20%) compared to the BPC group (1.5%, p<0.001).
- Overall Complication rate was higher in the control group (32% compared to the BPC group (8.7%, p=0.0012)
- Return to operating room rate was higher in the control group (12%) compared to the BPC group (0%, p=0.0046)

CONCLUSION

Using an intraoperative blood pressure challenge was associated with reduced hematomas and overall complication in patients undergoing masculinizing gender-confirming chest reconstruction. Guidelines for blood pressure challenge goals should be established to standardize care and reduce complications.