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Research Article

### ACTIVE ARTERIAL ELASTANCE IN BLOOD PRESSURE PREDICTION RISING AFTER THE FLUID CHALLENGE WHEN ASSISTING LAPAROSCOPIC PROSTATECTOMY

<sup>1</sup>Dr Muhammad Waqas Jamil, <sup>2</sup>Dr. Saddam Hussain, <sup>2</sup>Dr Faraz Ahmed<sup>1</sup>Bahawal Victoria Hospital Bahawalpur, <sup>2</sup>Sheikh Zayed Hospital Rahim Yar Khan

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**Abstract:**

*During a robot assisted laparoscopic prostatectomy, explicit physiological conditions, such as carbon dioxide insufflation and the Trendelenburg position can alter the remaining cardiac and brain task. hemodynamics. Insufficient blood vessel pulses are related to hypo perfusion, organ damage and impotent results. Dynamic blood vessel Ela stance has been proposed as a useful list for liquid administration. in hypotensive patients. We have thus evaluated whether dynamic Ea can predict a 16% rise in mean arterial pressure (MAP) after fluid administration. Our current research was conducted at Jinnah Hospital, Lahore from March 2019 to February 2020. The challenge of pneumoperitoneum and the precarious position of Trendelenburg. We have selected 43 patients accepting a robot-assisted laparoscopic prostatectomy. A liquid test was performed with 500 ml colloids in the Presence of preload-subordination and hypotension of blood vessels. Patients were delegated responses to blood vessel pressure or blood vessel pressure non-respondents as indicated by the fact that they showed an increase in MAP 16 after testing the liquid. The dynamic Ea was characterized as the proportion between the variety of beat pressure and stroke volume. Beneficiary's work a bending survey was conducted to assess the pressure of the blood vessels the reactivity after a liquid test during a robotic laparoscopy prostatectomy. Of the 56 patients, 19 were patients responding to blood vessel pressure and 26 were non-responders to blood vessel pressure. The single average Ea before liquid The challenge was much greater for the blood pressure monitors than for the non-responders to blood vessel pressure (0.78 vs. 0.62,  $P < 0.002$ ). In the collector Examination of the curvature of the mark, Ea Dynamics demonstrated a zone under The estimation of the ideal threshold of dynamic Ea for anticipating A 16% rise in MAP after the liquid media test was 0.76. Dynamic Ea can predict a 15% increase in MAP after the liquid test. during a robotic laparoscopic prostatectomy. This result recommends that The evaluation of blood pressure reactivity using Ea dynamics is used to Maintain a satisfactory circulatory tension of the blood vessels and improve perioperative conditions. patients undergoing preload undergo robotic laparoscopy prostatectomy under pneumoperitoneum and upper Trendelenburg position.*

**Keywords:** Active arterial Elastance in blood pressure, assisting robots' Laparoscopic prostatectomy.

**Corresponding author:**

**Dr. Muhammad Waqas Jamil,**  
Bahawal Victoria Hospital Bahawalpur.

QR code



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**INTRODUCTION:**

Robot-assisted laparoscopic prostatectomy is usually performed because of its many preferences, including one need for a blood link and less cautious confusions contrasting and usual open prostatectomy. However, a contrasting open prostatectomy the explicit physiological state is caused by carbon the necessary insufflation of dioxide and the precarious position of Trendelenburg used during mechanical prostatectomy [1]. Previous reports have indicated that the pneumoperitoneum and Trendelenburg position may influence cardiovascular workload and cerebral hemodynamics. In addition, the upper age limit for patients accepting automated prostatectomy is on the rise, and patients with a prostate have raised cardiovascular risks [2]. Hence, other thought of hemodynamic administration, including liquid administration is necessary during the perioperative period for patients through a mechanical prostatectomy. Maintaining good blood vessel circulation is fundamental to the success of a prostatectomy. to avoid tissue hypo perfusion, organ damage and causes non-cardiac surgery [3]. When the impotence causes non-cardiac surgery, the mean arterial pressure (MAP) decreases in preload-subordinated the liquid organization is generally considered to be an introductory treatment. Curiously, the dynamic elasticity of the blood vessels ( $E_a$ ), which is characterized by the proportion between the beating pressure and the stroke volume variety, has been proposed to be a valuable record of liquid administration in hypotension patients [4]. However, there are no reports on the capacity of the Dynamic  $E_a$  to predict the responsiveness of blood vessel pressure under the unique and conservative conditions created by the precarious Trendelenburg River and carbon dioxide pneumoperitoneum. In our current investigation, we have assumed that the dynamic  $E_a$  could be a valuable indicator of blood pressure responsiveness in robot-assisted laparoscopic prostatectomy [5]. To test our theory, we evaluated whether dynamic EA could predict a MAP rise of 15% in subordinate preload conditions ( $SVV > 0.57\%$ , 12%) and with hypotension of the blood vessels ( $MAP < 67$  mm Hg or systolic blood pressure  $< 90$  mm Hg) in patients accepting robotic laparoscopic

prostatectomy under carbon dioxide pneumoperitoneum and in the precarious Trendelenburg position.

**METHODOLOGY:**

A total of 48 male patients who were expected to for robotic laparoscopic prostatectomy due to prostate cancer malignancy was selected and composed informed consent was obtained of all patients. Rejection patterns were  $< 22$  or  $> 84$  years of age; clinical history of arrhythmia, valvular heart disease, ischemic coronary artery disease or left ventricular launching part  $< 42\%$ ; any aspiratory disease or preoperative irregularities chest x-ray; kidney infection (serum creatinine  $> 1.5$  mg/dL or accept dialysis); arrhythmia restarting after sedation acceptance; disappointment with blood vessel catheterization; or a specific hemodynamic observation frame (EV1000 clinical stage, Edward Lifesciences Corp, Irwin, CA) was associated with the blood vessel line using FloTrac™ sensors (Edwards Lifesciences Corp). Our current research was conducted at Jinnah Hospital, Lahore from March 2019 to February 2020. Cardiovascular performance and stroke volumes were After focusing on air, cardiac output and stroke volume, in addition, the SVV values were continuously acquired by the waveform of the blood vessels. investigation. SV max, SV min, and SV mean show the maximum, the negligible, General sedation and observation of the patients were carried out as stated in our institutional principles. Intraoperative observation included electrocardiography, the circulatory stress of blood vessels, the carbon dioxide furnace at the end of the chain and the oxygen at the periphery immersion. Sedation was initiated with sodium thiopental 5 mg/kg and targeted impregnation with remifentanyl (Orchestra1 Base Prime; Fresenius Kabi, Bad Homburg, Germany) with a convergence of impact sites of 3 ng/mL. Rocuronium Bromide 0.7 mg/kg was given to encourage tracheal intubation. Sedation was maintained with 2-5% sevoflurane. also, half of the oxygen in the clinical air. The convergence of The controlled target mixture of remifentanyl has been modified in accordance with the standard 3 and 8 ng/mL.

Figure 1:

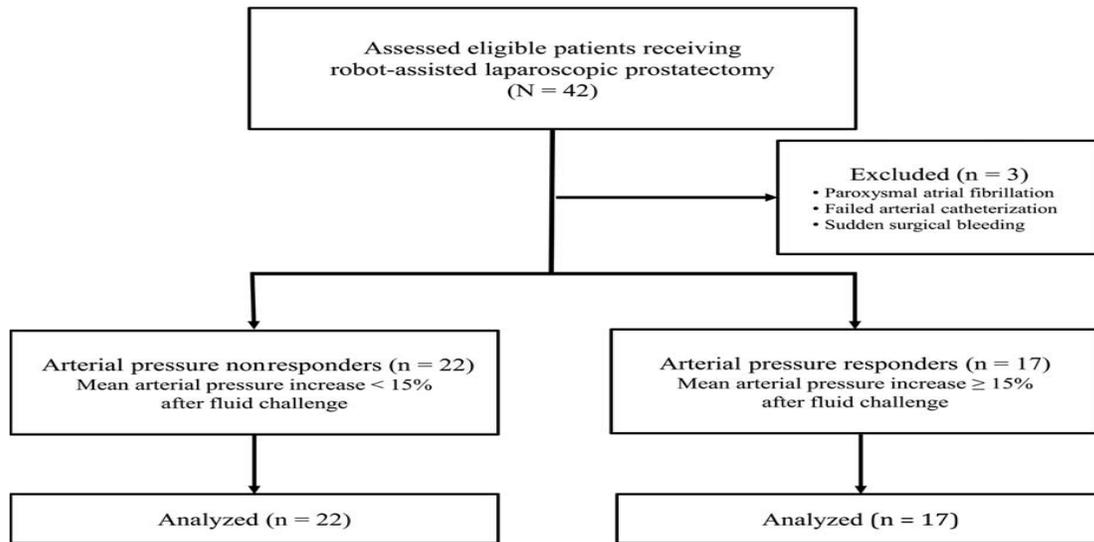
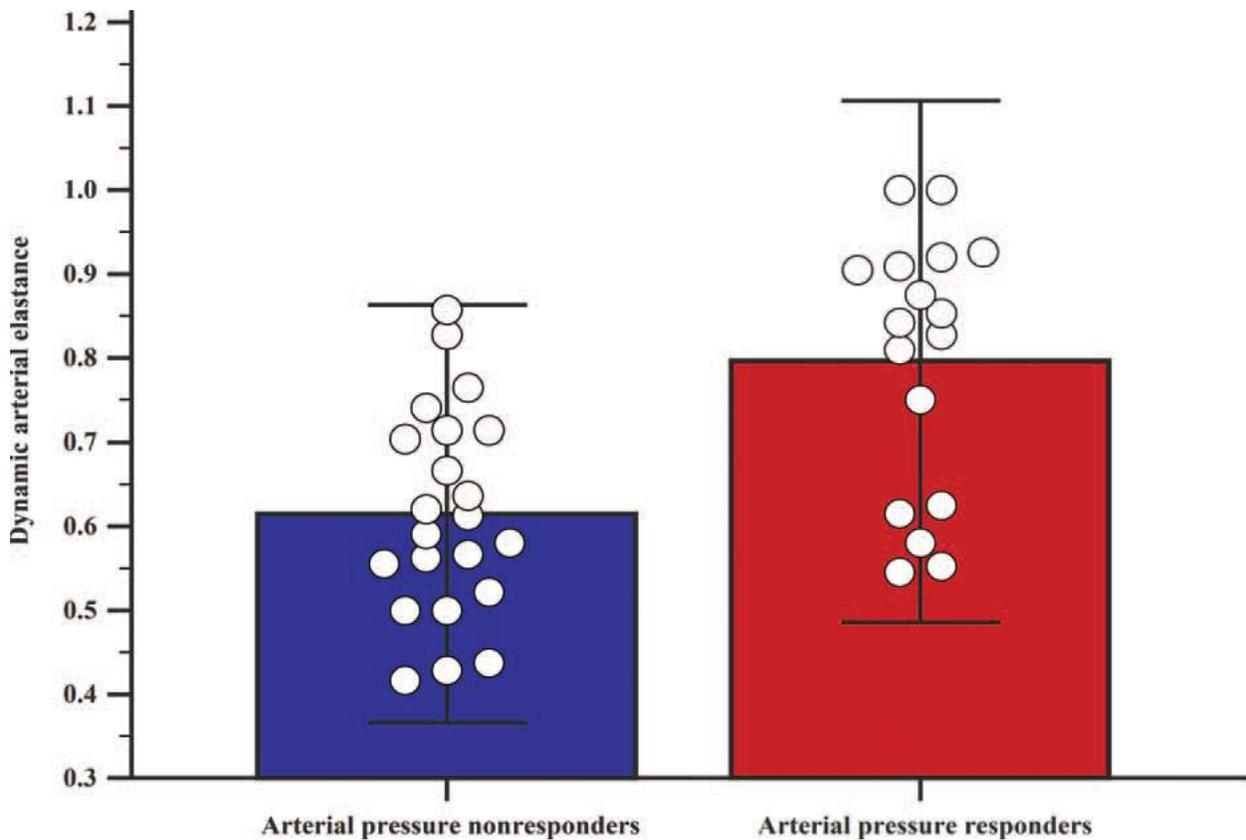


Figure 2:



	Study group	Control group	<i>p</i>
Number of patients (M/F)	25(13/12)	25(14/11)	
Age (y)	52.74 ± 9.81	54.96 ± 9.14	0.408
Body mass index (kg/m <sup>2</sup> )	25.52 ± 3.19	23.73 ± 2.56	0.081
Co-morbidity			
Hypertension	2	4	0.667
Diabetic mellitus	6	4	0.725
Coronary artery disease	0	0	
Cerebrovascular disease	0	1	1.000
Preoperative data			
Mean blood pressure (mmHg)	92.03 ± 12.84	96.59 ± 14.36	0.243
Creatinine (mg/dL)	0.82 ± 0.18	0.88 ± 0.25	0.337
Total bilirubin (mg/dL)	6.79 ± 7.91	5.61 ± 8.67	0.613
International Normalized Ratio	1.47 ± 0.54	1.34 ± 0.45	0.482
Hemoglobin (g/dL)	11.07 ± 2.23	10.64 ± 2.04	0.639
MELD score	14.91 ± 7.34	13.44 ± 6.83	0.555
Chronic kidney disease <sup>a</sup>			
Stage I	14	13	0.776
Stage II	9	9	1.000
Stage III	2	3	1.000
Stage IV	0	0	
Stage V	0	0	

Data are presented as mean ± standard deviation.

<sup>a</sup> Chronic kidney disease staging was according to National Kidney Foundation (2002) criteria. Stage I = glomerular filtration rate (GFR) ≥90 mL/min/1.73 m<sup>2</sup>; stage II = GFR 60–89 mL/min/1.73 m<sup>2</sup>; stage III = GFR 30–59 mL/min/1.73 m<sup>2</sup>; stage IV = GFR 15–29 mL/min/1.73 m<sup>2</sup>; stage V = GFR < 15 mL/min/1.73 m<sup>2</sup>.

### RESULTS:

out of 42 patients, all were initially qualified for this survey. Nevertheless, 3 patients were not allowed: 1 created a paroxysm Atrial fibrillation during the medical procedure, another underwent blood vessel catheterization. disappointment, and the remaining patient had abruptly paid attention and severe intraoperative hemodynamics that follow. change. In

the end, 39 patients were enrolled (Fig. 1). Socio-economics also, perioperative blood pressure information from non-responders in addition, blood pressure responses are summarized in Table 1. There was no critical contrast between the factors non-responders and blood pressure respondents in preload-dependent patients who accept an automated prostatectomy under pneumoperitoneum of carbon

dioxide and in the Trendelenburg position. Hemodynamic limits in the fluid test are recorded in Table 2. Largest expansions in PAD, stroke volume file, and list of heart after liquid test were seen in the responses to blood vessel pressure than in the pressure of the blood vessels non-respondents. A huge factual contrast in the average Dynamic Ea before the liquid

test (T2) is observed between non-responders and blood pressure respondents (0.61 versus 0.8,  $P < 0.002$ ; Fig. 2). The region below the elbow of each hemodynamic variable for waiting for a blood vessel pressure response after fluid administration The challenge is presented in Table 3.

**Table 2:**

	Before <sup>a</sup>	After <sup>a</sup>	<i>p</i> val <sup>b</sup>
	69 ± 9	77 ± 9	<0.01
	71 ± 9	74 ± 9	0.13
	59 ± 15	67 ± 16	<0.01
	57 ± 17	59 ± 10	0.42
	103 ± 17	99 ± 16	0.03
	106 ± 21	102 ± 22	0.14
	10 ± 3	13 ± 5	<0.01
	12 ± 4	14 ± 4	<0.01
	12 ± 3	16 ± 5	<0.01
	14 ± 3	17 ± 6	<0.01
	66 ± 8	69 ± 7	0.01
	66 ± 3	66 ± 6	0.67
	2.8 ± 0.8	3.4 ± 0.9	<0.01
	3.1 ± 0.9	3.1 ± 1.0	0.38
	1,011 ± 144	865 ± 288	0.01
	902 ± 286	905 ± 326	0.88

<sup>a</sup> CVP central venous pressure, PAOP pulmonary arterial occlusion pressure, oxygen saturation  
<sup>b</sup> e mean ± SD  
 unce) test for group and time interaction

**Table 3:**

Variable	ROC area	95 % CI	Cutoff value	Sensitivity	Specificity
Lactate, mmol/L	0.693*	0.625, 0.756	3.6	35.71	94.83
ScvO <sub>2</sub> , %	0.669*	0.599, 0.733	70	42.86	83.33
P(v-a) CO <sub>2</sub>	0.596*	0.525, 0.664	6	42.86	70.11
PI	0.835	0.777, 0.884	0.6	60.71	89.66

*P(v-a)CO<sub>2</sub>*, difference between central venous and arterial PCO<sub>2</sub> (mmHg), *PI* peripheral perfusion index measured by pulse oximetry, *ScvO<sub>2</sub>* central venous O<sub>2</sub> saturation

\* $P < 0.05$  for comparison of PI vs ScvO<sub>2</sub>, P(v-a) CO<sub>2</sub>, and lactate

**DISCUSSION:**

In our current survey, we have shown that dynamic EA can Anticipate a 17% expansion of PAD after the liquid preload trial patients under robot supervision undergo laparoscopy carbon dioxide pneumoperitoneum prostatectomy also in the noble position of Trendelenburg [6]. In addition, we found that a powerful estimate of the Ea of  $> 0.77$  was related to a 17% guide rise in the guide during robotic laparoscopy prostatectomy [7]. The precarious Trendelenburg position and pneumoperitoneum rise in the filling pressure of the right and left heart. Important changes in LDCs, stroke volume and stroke rates [8], and changes in the number of opposition are related to the insufflation of carbon dioxide or potentially the upside down position.16 These preliminary findings recommend that exceptional conditions of caution during automated prostatectomy [9]. The heart of the increment remains the task at hand. In addition, the brain perfusion pressure may be influenced by rising intracranial weight and intrathoracic pressure in patients undergoing mechanical prostatectomy under pneumoperitoneum of carbon dioxide and in the Trendelenburg position [10].

**CONCLUSION:**

On the whole, dynamic EA, which is fundamentally determined SVV and PPV, can be aware of the pressure of the blood vessels. reactivity to liquid test in robotic laparoscopy prostatectomy. Estimation of the ideal threshold of dynamic Ea for The predicted 17% increase in MAP after the liquid media trial is 0.77. Our current discoveries provide useful data for future fluid administration conventions in patients with preload-subordinated fluid condition and hypotension of blood vessels during carbon dioxide pneumoperitoneum also the precarious position of Trendelenburg.

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