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## Review Article

# Pelvic reconstructive surgery in geriatric urogynaecology: an uphill task

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### ABSTRACT

Female ageing “Geripause” is receiving much attention from the health care community due to worldwide increase in proportion of elderly population as a result of improved health services and awareness. Pelvic floor disorder such as urinary incontinence, faecal incontinence and pelvic organ prolapse disproportionately affect geriatric population and undermines the quality of life. Surgery remains an important and effective therapeutic option for many women with pelvic floor disorders. Operative outcome can be adversely affected in elderly because of physiologic changes associated with aging and the increased number of comorbidities. To present date there is limited information on morbidity and mortality following urogynaecology surgery in geriatric patients. A retrospective analysis was performed on all patients of age more than 60 years old who underwent urogynaecologic surgery in urogynaecology unit from January 2011 to December 2014. Total 551 patients of all age underwent pelvic reconstructive surgery and Out of 121 patients were of age more than 60 years. Overall in our series 66% patients had one or more than one risk factors and 23% of patients had one or more than one perioperative complications. Intraoperative and postoperative complications rate was 4.9% and 18.1% respectively. Elderly women can undergo urogynecologic surgery with an acceptable rate of complications and should not be excluded from interventions that may improve their quality of life.

**Keywords:** Pelvic reconstructive surgery, Perioperative complications, Pelvic organ prolapse, Urinary incontinence

### INTRODUCTION

“Geripause is a phase of life which begins at the start of menopause. It is characterized by the loss of reproductive function both anatomically as well as hormonally in line with ageing”.<sup>1</sup>Female ageing “Geripause” is receiving much attention from the health care community due to worldwide increase in proportion of elderly population as a result of improved health services and awareness. Statistics of US department of health and human services shows that total population of more than 60 years will increase from 18.4% in 2010 to 25.5% in 2050 and 6.7% of the population will be more than 75 years.<sup>2</sup> According to the United Nations Population Division by mid-

century, India population of 60 and older will also increase from 8% in 2010 to 19% in 2050. By 2050 in India of age 60 years or more, the population is expected to be 324 million.<sup>3</sup>

Pelvic floor disorder such as urinary incontinence, faecal incontinence and pelvic organ prolapse disproportionately affect geriatric population and undermines the quality of life. Luber et al reported that median age of women who seek care for pelvic floor disorders is 60 years with 12% of the women being more than 70 years old. They also noted that demand for treatment of pelvic floor disorders will increase by at least 45% over the next 30 years.<sup>4</sup> Jenifer et al forecasted

increase in number of American women with at least one pelvic floor disorder from 28.1 million in 2010 to 43.8 million in 2050.<sup>5</sup> With an increase in geriatric population and associated increase in prevalence of pelvic floor dysfunction, it is expected that the demand for treatment of pelvic floor disorders will increase in future.

### ***Etiology of pelvic floor disorder***

The etiology of pelvic floor disorder is multifactorial. Although pregnancy, obstetric trauma and multiparity are the major predisposing factors in the development of pelvic floor disorders it is influenced by aging, falling circulatory oestrogen levels caused by menopause, neurological, emotional, behavioural and/or environmental factors. Oestrogen deficiency at menopause is widely considered as a contributing factor for pelvic floor dysfunction due to presence of oestrogen receptors in supportive pelvic floor disorders although long-term benefits after oestrogen replacement has not been analysed in most studies.<sup>6</sup>

### ***Pathophysiology of aging***

Aging is a complex mechanism of progressive and irreversible processes occurring to molecules, cells and to the whole organism ending with death caused by free radicals, non-enzymatic glycosylation and apoptosis.<sup>7</sup> Aging causes ultrastructural changes in the urinary bladder that include dense band pattern, widening of the intercellular tight junctions and degeneration of the muscle cells that lead to the development of functional disorders of bladder.<sup>8</sup> Ageing not only induces changes in effector cells but also causes degenerative changes and impaired intracellular signalling in neurons of central and peripheral nervous system resulting in bladder and bowel disorders in elderly.<sup>9</sup> Rizk et al showed effect of ovariectomy on biomarkers of ageing in rats. Ageing independently decreases the collagen I/III ratio and blood vessel counts in urethral and anal canal submucosa and increases isomyosin I/II in the levator ani therefore associated with reduced closure function and incontinence and ovariectomy significantly increases these changes.<sup>10</sup> Moalli et al examined the biopsies of vaginal apex histologically in women with and without prolapse and found increase in type III collagen and Matrix Metalloproteinase- 9 expression in women with prolapse compared to women without prolapse. This suggests remodelling of tissue due to biomechanical stresses associated with prolapse.<sup>11</sup>

### ***Risks of pelvic floor surgery***

Surgery remains an important and effective therapeutic option for many women with pelvic floor disorders. Ambre et al reported the life time risk of undergoing one surgery for pelvic floor disorder is 11% by the age of 80 years.<sup>12</sup> Various well-known complications associated with reconstructive surgery in geriatric population include vascular and neurological injuries, pulmonary

complications like pulmonary oedema and pneumonia, cardiac problems such as congestive heart failure and myocardial infarction, postoperative infections, genitourinary fistula and thromboembolic complications. Intraoperative injuries to bladder, ureteral and bowel also increase the postoperative morbidity. One of the most important complications after surgical procedures in elderly is inappropriate antidiuretic hormone secretion, a response that is probably mediated by pain afferents which can lead to electrolyte imbalance and decreased urine output in postoperative period.<sup>13</sup> Operative outcome can be adversely affected in elderly because of physiologic changes associated with aging and the increased number of comorbidities like hypertension, diabetes mellitus, renal insufficiency, cardiac disease, pulmonary disease and others. Moreover in comparison with general gynaecologic surgery, reconstructive surgeries for pelvic floor disorders are longer with extensive dissection. The risks in this group of patients can also be exacerbated due to polypharmacy. Antidepressants drugs can cause anticholinergic side effects like cognitive impairment and voiding dysfunction, similarly antiplatelet and antithrombotic drugs can affect the operative haemostasis and can cause thromboembolic complications due to early withdrawal.<sup>14</sup>

Pelvic Floor Dysfunction is not only life threatening but it has a significant negative impact on the quality of life. It is therefore important to consider the potential benefits against the risks when surgery is being offered for these disorders particularly in geriatric women. As geriatric population is expected to increase in near future, the need for operative intervention for pelvic floor disorders will also increase. Clinical decision making and counselling regarding risk of perioperative complications following urogynaecologic surgery in elderly is crucial.

To date there is limited information on morbidity and mortality following urogynaecology surgery in geriatric patients. Hence we have performed a retrospective analysis of computerized generated records of all patients of more than 60 years old who underwent urogynaecologic surgery in urogynaecology unit from January 2011 to December 2014. Total 551 patients of all age underwent pelvic reconstructive surgery out of that 121 patients were of age more than 60 years. The mean age of the patients was 66.45 years (range 60 – 85 years) and 7 patients (5.8%) were more than 75 years. The mean body mass index was 23.46 kg/m<sup>2</sup>. Overall 80 (66.1%) patients had one or more than one comorbidities that included hypertension, diabetes mellitus, dyslipidemia, chronic obstructive pulmonary disease, chronic liver disease, chronic kidney disease, cerebral vascular accident (CVA), cardiac disease, psychiatric disorder, obesity and other rare diseases. Hypertension was detected in 54% of the cases (n=65) and diabetes mellitus in 35% (n= 42) in this series. All patients had preoperative anaesthesia clearance in the PAC clinic by the anaesthetist. 30% (n=37) patients were classified as ASA class 1 which indicates a healthy normal patient.

Most patients 62.8% (n=76) were classified as ASA II, which indicates the presence of mild systemic disease but no functional limitations, 6.6% (n=8) patients were classified as class III, which indicates the presence of severe systemic disease that limits activity but that is not incapacitating. None of the patients were classified as ASA IV or more. All patients received single dose cephalosporin as prophylactic antibiotics. For deep vein thrombosis prophylaxis all patients who had body mass index  $\geq 30$  received perioperative low molecular weight heparin until they were ambulant. Surgery was performed by the vaginal approach in 117 (96.7%) of patients by the abdominal approach in 1 (0.8 %) and by the combined approach in 3 (2.5%) cases. 106 (87.6%) patients had general anaesthesia, 9 (7.4%) had spinal anaesthesia and 6 (5.0%) had spinal with epidural anaesthesia and their mean operative time was 133.97 minutes (range 30 – 270 minutes) and the mean estimated blood loss was 311.65 ml (range 10 -1000 mL).

Study done by Kevin et al on 283 women of age more than 75 years old had underwent urogynaecologic surgery reported the perioperative complication rate of 25.8%.<sup>15</sup> Sung et al also reported overall complication rate of 14.4% after urogynaecologic surgery and increased risk of complications with increasing age.<sup>16</sup> Lambrou et al reported perioperative complications rate of 46% among 100 women of all ages who underwent urogynaecologic surgery and found increased prevalence of major complications specifically bladder and ureteral injury.<sup>17</sup> In our series of cases overall 23% of patients (n=28) had one or more than one perioperative complications. Intraoperative and postoperative complications rate was 4.9% and 18.1% respectively. Intraoperative complications included bladder injury in 1 patient, bowel injury in 1 patient and only 4 (3.3%) patients required intraoperative transfusion. According to Clavien-Dindo classification for postoperative surgical complications<sup>18</sup> we had 1 patient with Grade I complication which indicates any deviation from normal postoperative course without the need of any pharmacological and surgical treatment (wound infection), 16 patients with Grade II complication which includes blood transfusion and pharmacological treatment other than antipyretics, antiemetics and analgesics. 2 patients required blood transfusion and 14 (11.6%) patients had urinary tract infection out of which 9 patients required recatheterisation for urinary retention). 2 patients with Grade IVa complication which indicates life threatening complications with single organ dysfunction requiring ICU admission (1 patient had pulmonary oedema and 1 had aspiration pneumonia). Two (1.7%) patients required intensive care monitoring and only 1 patient was readmitted for urosepsis within 6 weeks of follow up. No patient required reoperation within 6 weeks of primary surgery. Kevin et al reported 1.5% thromboembolic complication rate but in this study no patient had thromboembolic complication.<sup>15</sup> Overall in our series 66% patients had one or more than one risk factors which can be evaluated and treated preoperatively

to make the surgery safe and 23% of patients had one or more than one perioperative complications.

## CONCLUSIONS

Elderly women can undergo urogynecologic surgery with an acceptable rate of complications and should not be excluded from interventions that may improve their quality of life. The important aspect of care of elderly women undergoing urogynecologic surgery is multidisciplinary approach involving anaesthesiologists, physicians and urogynaecologic surgeons. Although the incidence of perioperative complications definitely increases with increasing age, greater awareness and understanding about ageing can surely improve the operative outcome.

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