

 **Baystate Health**  **University of Massachusetts Medical School**

**Medical and surgical considerations
in the care of the Geriatric
Urogynecology Patient**

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The institute of medicine

- “The nation is facing an impending health care crisis as the number of older patients with more complex health needs increasingly out paces the number of healthcare providers with the knowledge and skills to adequately care for them”¹

¹Institute of Medicine of the National Academies. Retooling for an aging American, 2012.

Objectives

- Case Presentation
- Surgery in the geriatric patient
 - Epidemiology
 - Surgical trends
- Physiology of aging
- Surgical Outcomes
 - Midurethral sling
 - Reconstructive Procedures
 - Obliterative Procedures

Case presentation

- A vaginally parous 84 year old female presents with Proctidentia and difficulty urinating, denies UI
- She lives alone and walks with a cane
- Medical history significant for HTN, Osteoporosis with vertebral fracture, and Hypercholesterolemia
- Medications included a Thiazide diuretic, Beta blocker, Bisphosphonate, and HMG COA reductase inhibitor

Erekson *et al*, Obstet Gynecol 2012

Case presentation

- Physical examination confirmed Stage IV Uterovaginal prolapse and vaginal atrophy
- There was no urine leakage with and without prolapse reduction

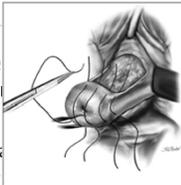


Erekson *et al*, Obstet Gynecol 2012

Case presentation

- She underwent an uncomplicated LeFort Colpocleisis and cystoscopy under general anesthesia
- Her postoperative course was unremarkable and she was discharged on postoperative day 3
- On postoperative day 5 she fell at home and was found by her daughter 30 minutes later
- She had used no narcotics since surgery

FIGURE 3 LeFort colpocleisis for prolapse repair



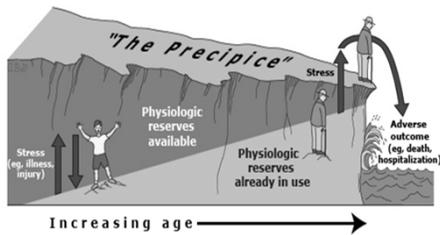
Erekson *et al*, Obstet Gynecol 2012

Case presentation

- She was readmitted with dehydration and hyponatremia which were thought to be the cause of her fall
- She continued to have hyponatremia despite discontinuation of the thiazide diuretic
- 18 months after surgery she reported that she finally regained her strength and was back at her baseline energy level

Erekson E *et al*, *Obstet Gynecol* 2012

Homeostenosis model



In the United States, survival beyond age 80 is rare?

True

False

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Epidemiology

- By the year 2030, the number of Americans older than 65 is estimated to be 70 million
- Survival beyond age 80 is common, with a life expectancy of 7 years for the average 80 year old male and 9 years for the average 80 year old female.
- By the age of 85, women comprise almost three quarters of the population

Friedman WH , Am J Obstet Gynecol 2006

Epidemiology

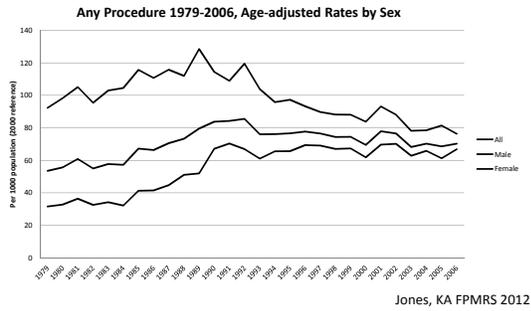
- Accelerated population growth began in 2011 when the first baby boomers reached 65
- Adults older than 65 years of age will increase from 46,059,000 in 2010 to 108,189,000 by the year 2050
- In the U.S. 237,000 gynecologic procedures are performed annually on women aged 65 and older
- The number of geriatric patients who require surgery is increasing

Surgical trends in the octogenarian and older patient

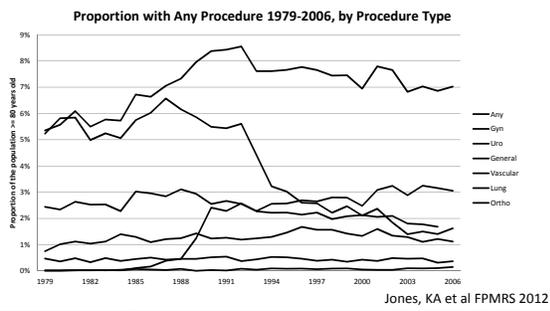
- Examined age-adjusted rates inpatient non-cardiac surgical procedures in the octogenarian and older patient: 1979 to 2006
- NHDS data, multistate probability sampling of inpatient discharges
- Secondary objectives to examine patient demographics, surgical complications, comorbidities, and mortality

Jones KA et al. FMRS 2012

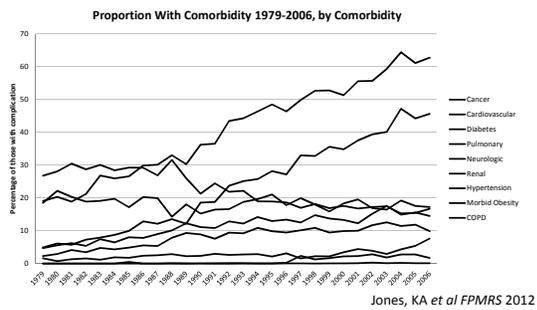
Surgical trends in the octogenarian and older patient



Surgical trends in the octogenarian and older patient

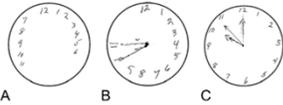


Surgical trends in the octogenarian and older patient



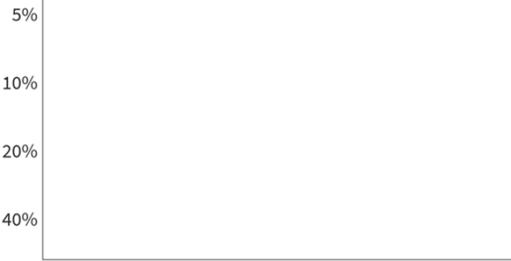
Mini-Cog

- 1. Instruct the patient to listen carefully to and remember 3 unrelated words and then to repeat the words.
- 2. Instruct the patient to draw the face of a clock, either on a blank sheet of paper, or on a sheet with the clock circle already drawn on the page. After the patient puts the numbers on the clock face, ask him or her to draw the hands of the clock to read a specific time, such as 11:20.
- 3. Ask the patient to repeat the 3 previously presented words.



Scoring
 Give 1 point for each recalled word after the CDT distractor. Score 1-3.
 A score of 0 indicates positive screen for dementia.
 A score of 3 indicates negative screen for dementia.
 A score of 1 or 2 and an abnormal CDT indicates positive screen for dementia.
 A score of 1 or 2 with a normal CDT indicates negative screen for dementia.

What is the prevalence of dementia in the non-institutionalized elderly, over 80 years old



Under reported conditions in elderly

TABLE 1
 Prevalence of underreported conditions in older persons

Condition	Prevalence	
	70-79 ⁸	≥ 80
Undernourishment (risk of malnutrition) ²	2% (>10%)	5% (40%)
Cognitive impairment/dementia ³⁻⁵	10%	40%
Vision impairment ⁶	11%	25%
Hearing impairment ⁶	17%	45%
Balance impairment ⁶	69%	89%
Maltreatment (physical, emotional, financial, sexual abuse; abandonment; neglect, self-neglect) ⁷	5-14%	
Dysphagia ⁸⁻¹⁰	15-30%	
Frailty ^{11,12} (range)	22% (5-58%)	

Miller. Gynecologic care of older women. Am J Obstet Gynecol 2012.

Aging is a ___ process.

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Aging Physiology

- It is essential to understand the clinical significance of aging physiology which is challenging because heterogeneity is the hallmark of aging

Chiang et al. Clinical OBGYN, 2007

Physiology

- Aging is not a homogenous process
- Organs in the same person age at different rates; influenced by genetics, environmental exposures, lifestyle choices
- Danish twin study found 25% of variation in longevity due to genetics, environmental factors accounted for 50%
- With greater longevity genetic influence became more important, age 90-100

vBHjelmor Hum Gen 2006

Immunity and Aging

- Increased infection, malignancy, and autoimmune dx
- Nosocomial infections are significantly increased in the aging population
- The microbiology of infections may be different due to comorbidities or decreased immune function
- Infection in geriatric patients may present with non-specific symptoms compared to younger patients

Renal Function and Aging

- Overall aging is associated with a loss of renal mass from 20-25% from age 30-80
- Fat and fibrosis replace functional parenchyma
- Remaining glomeruli have impaired filtering ability
- Creatinine clearance decreases with age
- Renal excretion of drugs changes significantly with advancing age

Corsonello A et al. Current Medicinal Chemistry 2010, 17, 571-584.

Renal Function and Aging

- Fluid and electrolyte homeostasis are maintained relatively well with aging
- Ability to maximally dilute urine and excrete a water load is impaired under conditions of stress.

Neugarten J et al Am J. Kidney Dis, 1999, 34, 884-8

Renal Risk Assessment

- In patients 70 years or older, renal impairment is an independent risk factor for postoperative 6 month mortality
- Occurrence of renal perioperative complications are predictors of decreased long term survival
- Risk factors for renal insufficiency:
 - Age >59 years, BMI greater than 32, high risk surgery, peripheral vascular disease, emergent surgery, liver disease, COPD

Recommendations

- Optimal hydration
- Avoid hypotension and hypovolemia
- Electrolyte imbalance correction
- Drug dosage adjustment
- Avoidance of nephrotoxic drugs and IV dye
- Careful fluid management and monitoring urine output

Gastrointestinal tract and Aging

- Overall effects of aging are modest
- Lining of oral mucosa thins
- Gums recede, exposing tooth cementum, more prone to decay
- Aging is associated with increased stiffness and reduced peristalsis in the esophagus
- This may increase esophageal acid exposure
- Aging is also associated with decreased gastric emptying

Corsonello A et al. Current Medicinal Chemistry 2010, 17, 571-584

Recommendations

- Obtain GERD history in patient
- G-tube when undergoing general anesthesia
- Intubation if uncontrolled GERD

Cardiovascular system and aging

- Increased risk for HTN and CAD
- Left atrium enlarges and left ventricle stiffens
- Aortic valves and mitral annulus thickens and develop calcific deposits
- Negligible change in resting HR, marked decrease in Maximum HR in response to exercise or stressors

Cardiac Risk Assessment

- In patients undergoing non-cardiac surgery incidence of peri-operative cardiac events including cardiac arrhythmia, and cardiac arrest is 1.1%
- Patients older than 70 years of age with CVD risk factors undergoing noncardiac surgery have a higher 6- month mortality rate

S.K. Dewan et al. European Journal of Internal Medicine, 2012

Clinical Predictors of Perioperative Cardiac Events

- Ischemic heart disease
- Congestive heart failure
- Cerebrovascular disease
- Insulin-dependent diabetes
- Serum Creatinine >2.0 mg/dL
- Age (minor risk factor)

Recommendations

- Identify clinical cardiac risk factors
- Systemic medical therapy with beta-blockers and statins are the cornerstones of perioperative management
- Screen preoperatively for- hx of ischemic heart disease, heart failure, cerebrovascular disease, diabetes, and renal insufficiency

Lung Function and Aging

- Alveolar ducts enlarge due to loss of elastic tissue, decreased SA for gas exchange
- Overall 1/3 SA of lung tissue lost over life span, anatomic dead space increases
- Increased stiffness of the chest wall
- Diaphragm flattens and becomes less efficient
- Functional reserves decrease

Pulmonary

- Postoperative pulmonary complications account for 40% of perioperative deaths in patients aged 65 years or older
- Most important pulmonary complications include atelectasis, pneumonia, respiratory failure, and COPD exacerbation

S.K. Dewan et al. European Journal of Internal Medicine, 2012

Pulmonary

- Recommendations for risk assessment by the American College of Physicians for patients undergoing non-cardiac surgery
 - High risk patients should be evaluated
 - COPD
 - Age older than 60
 - ASA Class II or higher
 - Functional Dependence
 - CHF

Recommendations

- Check serum albumin level below 35g/L is a strong marker for increased postoperative pulmonary complication risk
- Check patient for sleep apnea and undiagnosed pulmonary hypertension
- Incentive spirometry and deep breathing
- Patients with COPD should receive tiopropium which may reduce postoperative pulmonary complication rates

Decreased Muscle Mass

- Sarcopenia is the physiologic loss of muscle mass with age
 - Measured by total body protein
- Leads to impaired mobility and balance
 - Type II muscle fibers atrophy with aging
 - Causes are multifactorial

Decreased Muscle Mass

- Causes
 - Disuse
 - Altered endocrine function
 - Chronic diseases
 - Inflammation
 - Insulin resistance
 - Nutritional deficiencies

Author manuscript: J Am Med Dir, 2011

Recommendations

- Assess ADLs
- Ask about mobility: how far can they walk, do they walk up stairs easily, etc.
- Take a social history: who do they live with, who makes meals, who does the laundry and shopping, etc.
- Possibly assess gait as they walk into the exam room

Aging and Endocrine Function

- 26.9% of US residents aged 65 and older have diabetes
- Diabetes is a risk factor for postoperative CHF
- Preoperative testing and laboratory evaluation should include EKG, BMP, and Hemoglobin A1C

S.K. Dewan et al. European Journal of Internal Medicine, 2012

Aging and Endocrine Function

- Treat thyroid conditions in the elderly conservatively
- Thyroid hormone increases myocardial oxygen demand- can lead to arrhythmias, MI, etc. if used inappropriately
- Don't operate on patients with uncontrolled hyperthyroidism

Physiology

- Increased susceptibility to disease
- Renal function decline
- Altered contractions and sphincter tone of pylorus is common
- There is an age-related decrease in maximum heart rate
- Decreased surface area of lung tissue
- Decreased immune function
- Decreased muscle mass

What are the most common postoperative complications in the elderly?

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Four Common Postoperative Complications in the Geriatric Patient

- Falls
- Delirium
- Surgical Site Infection
- Electrolyte imbalance

Falls

Falls

- Are common
- 30-40 % of community dwelling adults >65 years fall each year
- 10% associated with major injury including fracture, serious soft tissue injury, traumatic brain injury
- Inability to get up after fall -> dehydration, pressure ulcers, rhabdomyolysis

Falls

- Risk Factors
 - Past history of a fall
 - Lower-extremity weakness
 - Age
 - Female gender
 - Cognitive impairment
 - Balance problems
 - Psychotropic drug use
 - Arthritis
 - History of stroke
 - Orthostatic hypotension
 - Dizziness
 - Anemia

Falls

- In a systematic review by Stern C. et al., found multiple interventions to prevent falls
 - Giving a pre-operative education package
 - Starting a falls prevention exercise program in the elderly prior to surgery
 - Vitamin D and Calcium supplementation
 - An evaluation comprised of risk assessment, staff and patient education, medication review, Alteration in ward environment, an exercise program, and alarms for ambulant patients

Stern C et al. Int J Evid Based Health Care 2009

Delirium

- Prevention may be possible in up to 30-40% of patients
- Intervention should begin preoperatively
- Recent Cochrane review revealed that preoperative geriatric consultation decreased incidence and severity of Delirium
- Addition of daily Oral Haloperidol 0.5 mg tid up to POD3
 - decreased incidence of Delirium
 - decreased hospital stay by 5.5 days

Siddiqi et al Cochrane database of Sys review, 2007

Common complications

- Surgical site infections
 - May be related to impaired ADLs
- Electrolyte Imbalances
 - Aging, diminished renal reserve
 - Perioperative fluid management should be carefully monitored

Surgery for prolapse is not advised in patients over 80 years old?

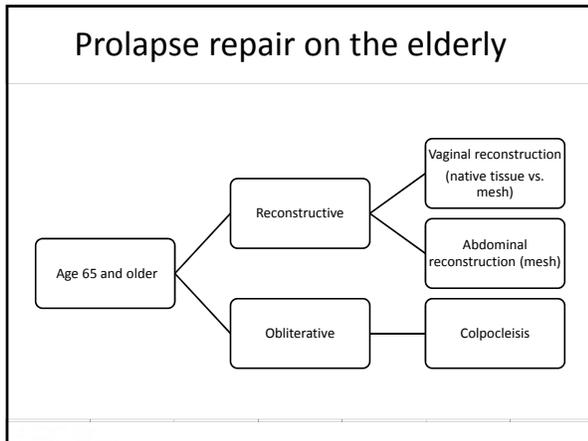
True

False

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Surgical Outcomes

- Prolapse repair
 - Reconstructive
 - Obliterative
- Surgery for Stress incontinence





- ### Obliterative procedures
- Excellent anatomic outcome with success rates approaching 100%
 - Minimal anesthesia
 - Less blood loss vs. Reconstructive procedures
 - No need for hysterectomy as only increases blood loss, operating time, conversion to laparotomy

Hysterectomy at the time of Colpocleisis

Int Urogynecol J 2016; 27:405-410
DOI 10.1007/s00145-015-2903-4

ORIGINAL ARTICLE

Hysterectomy at the time of colpocleisis: a decision analysis

Kishia A. Jones¹ · Yueran Zhou² · Senay Sahak¹ · Qi Harman¹

Received: 22 July 2015 / Accepted: 15 November 2015 / Published online: 12 December 2015
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Outcomes for reconstructive and obliterative procedures

- Improved QOL
- No difference in outcomes compared to reconstructive procedures¹
- Largest study of 325 patients and up to 7 years follow-up , anatomic success 98 % , 93 % patient satisfaction, complication rate low 15%, Mortality 1% ²

1. Petcharopas *et al.* Int Urogyn Journal 2018
2. Zebede *et al.* Obstet gynecol 2013

Reconstructive procedures in the elderly

	Sacrocolpopexy (n= 70)	Native tissue repair (n= 85)	Vaginal mesh repair (n= 58)	p ^a
Post-operative complications n (%)	6 (8.6)	11 (12.9)	14 (24.1)	**0.039
Clavendish Score n (%)				
I	1 (1.4)	1 (1.1)	3 (5.1)	ns(0.13)
II	4 (5.7)	8 (9.4)	9 (15.5)	
III	1 (1.4)	2 (2.4)	2 (3.4)	
Lost to follow-up n (%)	4 (5.7)	6 (7)	6 (10)	ns(0.6)
Recovery time (month) mean ±SD	1.2 ± 1.15	1.24 ± 1.02	1.09 ± 0.58	ns(0.68)
Anatomical correction at 1 year n (%)	63 (95)	72 (91)	51 (98)	ns(0.2)
Surgical satisfaction n (%)	69 (99)	78 (98)	51 (98)	ns(0.3)

^aFisher test, ^bKruskal-Wallis test, ns not statistically significant, SD standard deviation
^cp < 0.05

-213 women, ages 70-80 undergoing reconstruction: SC, Vaginal reconstruction with mesh, Native tissue
-SC less complications
-no difference in complication grade, anatomic success, or patient satisfaction

Tibi, B *et al.* Archives of Gyn and Ob 2019

Urinary incontinence increases the risk of mortality?

True

False

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Urinary incontinence in the elderly

- Prevalence increases with age
- 10-40% in women over 70
- UI considered a geriatric syndrome; highly prevalent multifactorial condition associated with increased morbidity and associated with disability, nursing home admission
- Unique in that it does not result in increased mortality

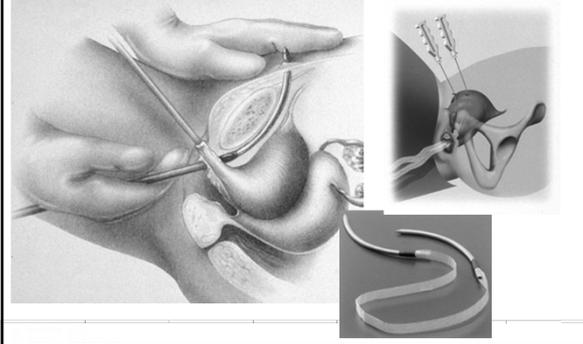
Urethral bulking agents

- Injectable agents delivered trans or periurethally
- Less invasive than midurethral sling
- Can be performed in office or operating room
- Collagen (6-12 mo), non-degradable synthetic agents
- Efficacy declines over time 48%, 12-23 months, 32% at 24-47 months



Dmochowski et al J Urol 2010

Outcomes for incontinence procedures in the elderly



Outcomes for incontinence procedures in the elderly

- 5 prospective and 2 retrospective studies included in this review
- Reviewed Tension free tape, colposuspension, and cadaveric fascial sling
- Follow-up 3-30 months
- Cure rates slightly lower in older women compared to younger in one study, similar trend in two others
- Intraoperative complications occurred at similar rates
- Postoperative complications (UTI, urgency, voiding dysfunction, mesh erosion) more common in older women in a few studies

Sharp *et al*, Current opinions in Urology 2006

Conclusions

- The United States population is aging
- Demand to the health care system will increase in the coming years
- Aging affects all organ systems and we must consider these changes when we care for the elderly
- Surgery in this population is safe although overall morbidity may be higher

How could we have prevented complications in our elderly patient postoperatively?

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