Greetings, I am Dr Karl Nath, the Editor-in-Chief of *Mayo Clinic Proceedings*, and I am pleased to welcome you to the New Year and to the multimedia summary for the journal’s January 2019 issue. There are 4 articles this month that have been selected as our Editor’s Choice or Highlights articles.

Our Editor's Choice is an Original Article entitled “Septal Myectomy in Hypertrophic Cardiomyopathy: National Outcomes of Concomitant Mitral Surgery.” It is authored by Dr Kimberly Holst, from the Department of Cardiovascular Surgery, and colleagues from the Robert and Patricia Kern Center for the Science of Health Care Delivery, and Department of Cardiovascular Medicine at Mayo Clinic, in Rochester, Minnesota.

Mitral regurgitation is common in patients with obstructive hypertrophic cardiomyopathy and is usually caused by systolic anterior motion rather than intrinsic valvular pathology. The surgical management of mitral regurgitation in patients with hypertrophic cardiomyopathy is controversial. While mitral regurgitation due to systolic anterior motion often resolves with adequate septal myectomy, some groups advise mitral valve procedures to address mitral regurgitation at the time of septal myectomy.

The purpose of the present study was to assess the frequency and implications of mitral valve surgery at the time of septal myectomy for hypertrophic cardiomyopathy in a national cohort. The authors utilized the National Inpatient Sample to analyze surgical outcomes in patients with hypertrophic cardiomyopathy undergoing septal myectomy from January 2003 through December 2014. Univariate analyses were used to compare patients undergoing septal myectomy with or without concomitant procedures, and logistic regression was used to determine factors associated with prolonged length of stay and in-hospital mortality.

This national cohort included 1174 adults with a primary diagnosis of hypertrophic cardiomyopathy undergoing septal myectomy. Overall mean age was 54 years, and 45% of patients were male. Isolated septal myectomy was performed in 67%, and the remainder had concomitant cardiac procedures, most frequently mitral valve repair or replacement.

The data demonstrate that median length of stay was increased in those with concomitant mitral valve surgery, 7 days, as compared with isolated septal myectomy, 6 days. Overall hospital mortality was 3% and was lowest
in those undergoing isolated septal myectomy. In otherwise isolated septal myectomy, mitral replacement increased the likelihood of in-hospital death on univariate analysis. The authors conclude that intervention on the mitral valve during septal myectomy is more common nationally than in specialized centers, and the addition of mitral valve replacement and other concomitant cardiac procedures was associated with increased rates of hospital mortality and length of stay compared with patients undergoing isolated septal myectomy. These results suggest that concomitant mitral valve intervention is associated with increased risk. The authors suggest that these findings also support the need for increasing surgeon experience with septal myectomy for hypertrophic cardiomyopathy to further improve outcomes, and the access of patients to high-quality surgical care.

Our first Highlight is an Original Article entitled “Large Chromosomal Rearrangements Yield Biomarkers to Distinguish Low-Risk From Intermediate- and High-Risk Prostate Cancer.” This study is authored by Dr George Vasmatzis, from the Department of Molecular Medicine, and colleagues from multiple departments including the Biomarker Discovery Program, Center of Individualized Medicine, Department of Health Sciences Research, Division of Cytogenetics, and Department of Urology, at Mayo Clinic, in Rochester, Minnesota.

Of the 200,000 American men diagnosed each year with prostate cancer, more than half could be considered at a low risk of progression to cancer and are potential candidates for active surveillance. The Gleason score is currently the most important clinical and pathologic index for determining risk of progression. This score is based on histologic assessment of a prostate biopsy and is the sum of the 2 highest Gleason patterns. However, not infrequently, the needle prostate biopsy captures only Gleason Pattern 3, thereby making it difficult to determine whether the patient has, indeed, a low risk Gleason score 6 (the sum of 3 and 3 from each Gleason pattern), or a Gleason score greater than 6, the latter indicating the presence of prostate cancer necessitating treatment. Moreover, in correlation studies of the Gleason score and prostatectomy, in more than one third of the cases, the Gleason score was updated from 6 based on the needle biopsy to 7 or higher on the prostatectomy specimen.

The purpose of the present study was to test the hypothesis that chromosomal rearrangements can distinguish low risk of progression from intermediate and high risk of progression to prostate cancer, and to assess
whether these chromosomal rearrangements can potentially identify men with low risk of progression to prostate cancer by needle biopsy who, indeed, may have intermediate and high risk of progression to prostate cancer.

Chromosomal rearrangements, including abnormal junctions and copy number variations, were assessed by mate pair sequencing of amplified DNA from pure populations of Gleason patterns in 154 frozen specimens from 126 patients obtained between August 2001 and July 2011. Potential chromosomal rearrangements biomarkers were identified which exhibited a higher incidence in intermediate and high risk of progression than in low risk of progression to cancer, and significance in prostate cancer biology. Independent validation was performed by fluorescence in situ hybridization in 152 specimens from 124 patients obtained between February 2002 and July 2008.

The number of abnormal junctions did not distinguish low risk of progression from intermediate and high risk of progression. Loci corresponding to genes implicated in prostate cancer were more frequently altered in intermediate and high risk of progression. Integrated analysis of copy number variations and microarray data yielded 6 potential markers that were more frequently detected in a Gleason pattern 3 of a Gleason score 7 prostate cancer than in a Gleason pattern 3 of a Gleason score 6 prostate cancer. Five of these were cross-validated in an independent sample set: specifically, these data demonstrate that deletions in PTEN and CHD1 and gains in ASAP1, HDAC9, and MYC significantly distinguished a Gleason pattern 3 in a Gleason score 6 cancer from a Gleason pattern 3 in a Gleason score 7 cancer.

The authors conclude that copy number variations in regions encompassing important prostate cancer genes were predictive of cancer significance and that assays based on these probes have the potential to identify men with low risk of progression to prostate cancer by needle biopsy who, indeed, have intermediate and high risk of progression to prostate cancer in their prostate gland.

The second Highlight is an Original Article entitled “Electroacupuncture Versus Pelvic Floor Muscle Training Plus Solifenacin for Women With Mixed Urinary Incontinence: A Randomized Noninferiority Trial.” This study is authored by Dr Baoyan Liu, from Guang’an Men
Mixed urinary incontinence is characterized by involuntary loss of urine associated with urgency and also with exertion, effort, sneezing, or coughing. Of all the women with urinary incontinence, approximately one third have mixed urinary incontinence and, compared with pure stress urinary incontinence and urgency urinary incontinence, mixed urinary incontinence is characterized by more severe symptoms and exerts a greater negative effect on the quality of life. Management of mixed urinary incontinence can be challenging. Conservative treatment consists of pelvic floor muscle training as a first line therapy along with anticholinergic drugs or beta 3 adrenergic receptor agonists to reduce urine leakage. Pelvic floor muscle training can be effective, but its long-term efficacy is unsatisfactory because of poor compliance. Solifenacin, an antimuscarinic agent, reduces incontinence episodes, but is limited by its adverse effects which include dry mouth, dry eyes, and constipation. Indeed, the long term adherence to pelvic floor muscle training or antimuscarinic agents is less than 25%. Other approaches are thus needed and, as suggested by small pilot studies, one such approach may involve acupuncture.

The present study evaluated the efficacy and safety of electroacupuncture versus pelvic floor muscle training and solifenacin for women with mixed urinary incontinence. This randomized controlled noninferiority trial was conducted at 10 hospitals in China between March 2014 and October 2016. Participants were randomized 1:1 to receive electroacupuncture, 36 sessions over 12 weeks with 24 weeks of follow-up, or pelvic floor muscle training and solifenacin (at a daily dose of 5 mg) over 36 weeks. The primary outcome was percentage change from baseline to week 12 in mean 72-hour incontinence episode frequency measured by the 72-hour bladder diary. It was analyzed in the per-protocol set with a prespecified noninferiority margin of 15%.

Of 500 women with mixed urinary incontinence who were randomized, 239 subjects in the electroacupuncture group, and 228 subjects in the pelvic floor muscle training and solifenacin group, completed treatment per protocol, and were included in the primary outcome analysis. At weeks 1 through 12, the percentage of reduction from baseline in mean 72-hour incontinence episode frequency was 38% in the electroacupuncture group, and 36% in the pelvic floor muscle training-solifenacin group. These
findings demonstrate noninferiority. Additionally, the treatment effect persisted throughout follow-up. Statistically significant improvements were found for secondary outcomes in both groups, with no significance difference between treatments.

The authors conclude that in women with moderate to severe mixed urinary incontinence, electroacupuncture was not inferior to pelvic floor muscle training and solifenacin in decreasing the 72-hour incontinence episode frequency, and shows promise as an effective alternative for the treatment of mixed urinary incontinence.

The third Highlight is an Original Article entitled “Low Rate of Intra-hospital Deep Venous Thrombosis in Acutely Ill Medical Patients: Results from the AURELIO study.” This study is authored by Dr Lorenzo Loffredo, from Maggiore Hospital, Bologna, Italy, and colleagues from several other universities in Italy and the AURELIO Study Group. AURELIO is an acronym for (rAte of venoUs thRombosis in acutEly iLl patIents hOspitalized in internal medicine wards).

Acutely ill, hospitalized medical patients are generally considered to have a significantly increased risk for venous thromboembolism, and prophylaxis against such venous thromboembolism is recommended by certain guidelines. As compared with asymptomatic deep venous thrombosis in hospitalized patients, the rate of occurrence of symptomatic deep venous thrombosis is much less, and for either, there is significant variability in reported rates for DVT. Recommendations for prophylaxis with anticoagulants in such patient populations are based on the finding that such prophylaxis may reduce the risks for pulmonary embolism and DVT-related deaths. Relevant to such recommendations are data that reliably define the risk for DVTs in such patient populations. Given the variability in the reported rates of occurrence of DVT, and the fact that there are very few, if any, prior studies which have determined what percentage of DVTs are present at admission, the present study evaluated the effect of hospitalization on rate of DVT occurrence by the cumulative incidence of DVT in the proximal venous tract of the lower limbs at admission and discharge. This multicenter observational study was undertaken in hospital-university internal medicine ward services, and included consecutive acutely ill medical patients. Patients underwent compression ultrasonography of proximal lower limb veins at admission and discharge. The primary end-points of the study was the occurrence of DVT.
Among 1,340 patients, 26 had asymptomatic DVT at admission and were excluded. During the follow-up, 144 patients were excluded because of hospitalization less than 5 days. The remaining 1,170 patients underwent a compression ultrasonography at discharge. Two-hundred and fifty (21%) underwent a prophylaxis with parenteral anticoagulants; the remaining 920 (79%) were not treated with anticoagulants. The mean length of hospitalization was 13 days. Compared to patients without prophylaxis, those treated with parenteral anticoagulants had higher incidence of active cancer, heart and respiratory failure, pneumonia, renal failure, previous venous thromboembolic disease, reduced mobility and elderly age. During the hospital stay, three patients with a negative compression ultrasonography at admission, experienced a DVT in the proximal tract (that is, 0.025% of patients, a rate of 1 per 5017 patient-days); two of these patients received prophylaxis with parenteral anticoagulants.

The authors conclude that in the real world acutely ill, hospitalized medical patients, the intra-hospital DVT occurrence is extremely low, and as regards patients with a DVT, some 90% are asymptomatic DVTs that are detected at admission, not during the hospitalization itself. This finding merits further investigation and suggests the need for a novel diagnostic and therapeutic work-up for DVT management and a careful re-analysis of anticoagulant prophylaxis in acutely ill, hospitalized medical patients.

You can access these Highlights and Editor’s Choice articles free of charge during the entire month of January. When you visit our Mayo Clinic Proceedings website at [www.mayoclinicproceedings.org](http://www.mayoclinicproceedings.org), you will find links to our social media by clicking the buttons at the top of the home page to follow us on Facebook, Twitter, and YouTube. On our YouTube channel, you will find author interviews, 60-second video article summaries, and our “Mayo Clinic Proceedings’ Fireside Chat” recordings, which are available from our website on the home page, as well as through iTunes. You will also find our “Pioneers and Legends” video interviews currently featuring Dr Nanette Wenger, distinguished professor from Emory University in Atlanta, Georgia. On our website you will see many news stories that are based on articles published in Mayo Clinic Proceedings, and finally you will see other free content and articles published online ahead of print. As always, we greatly thank you for your interest in, and support of, Mayo Clinic Proceedings.

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