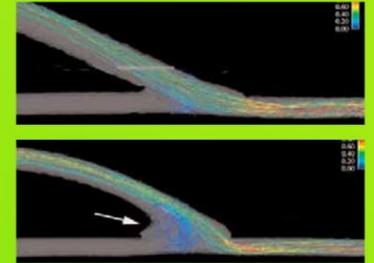


Hormone Replacement Therapy: Friend or Foe?

A Retrospective Study for Prospective Research



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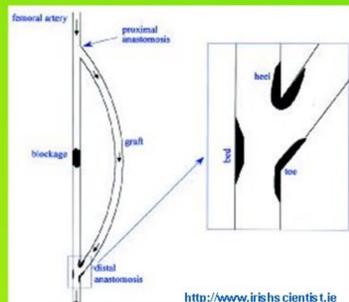
http://www.ccs.ornl.gov/Internships/rams_08

What is the problem?

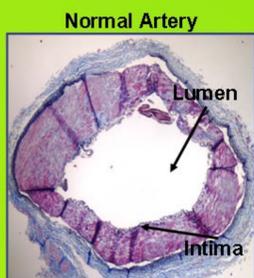
- Atherosclerosis: hardening of arterial vessels characterized by chronic inflammation and deposition of fatty plaques
- Risk factors include diabetes, smoking, high blood pressure, and obesity
- Treatments include statin drugs, diets, lifestyle changes, and surgical interventions such as angioplasty and femoropopliteal (fem-pop) bypass

Femoropopliteal Bypass and Intimal Hyperplasia

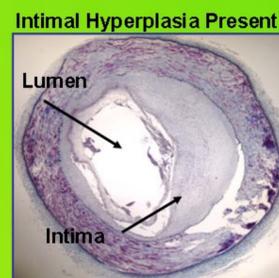
- Intimal Hyperplasia (IH) - universal response of an artery to injury
- Procedures such as fem-pop bypass respond with an influx of cells from the media to the intima
- IH causes restenosis, or post-surgical narrowing of the artery, in 1/3 of cases



Restenosis typically occurs in the distal anastomosis, where the graft rejoins the artery. The toe, heel, and bed of the distal anastomosis are the most common sites for intimal hyperplasia.



In healthy vessels, the intima is only about one cell layer thick. When intimal hyperplasia occurs, smooth muscle cells move from the media to the intima. This occludes the lumen, which decreases arterial blood flow.

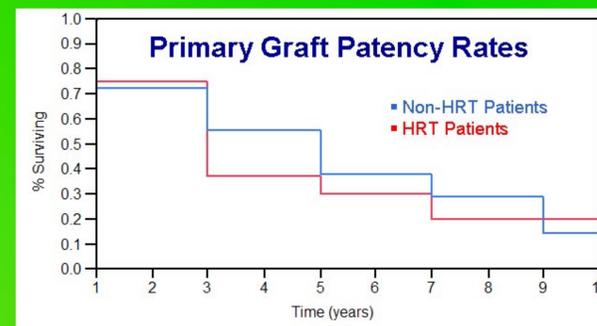


University of Tennessee Graduate School of Medicine

The Role of Hormone Replacement Therapy

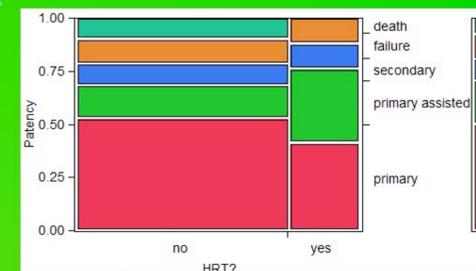
- Post-menopausal women on hormone replacement therapy (HRT) have more complications after fem-pop bypass than post-menopausal women without HRT
- This clinical observation contradicts the accepted theory that estrogen has vascular protective effects

Statistical Analyses



- Kaplan-Meier analysis: cumulative primary patency rate over a ten year period
- Shows lower primary patency rates in HRT patients

- Mosaic Plot showing patency rates divided by the patients' use of HRT
- Demonstrates lower primary patency rates, and increased assisted patency in HRT patients



| Count Expected | Primary | Primary Assisted | Secondary | Total |
|----------------|---------------|------------------|---------------|-------|
| No | 21 18.3492 | 3 7.55556 | 10 8.09524 | 34 |
| Yes | 13 15.6508 | 11 6.44444 | 5 6.90476 | 29 |
| Total | 34 | 14 | 15 | 63 |

- Chi-square analysis of mental and mood disorders vs. graft patency
- P value= .0178

What Did I Work On?

- Determined statistical significance of numerous medical risk factors in relation to graft patency and intimal hyperplasia
- Used appropriate tests to find correlations between variables, including use of hormone replacement therapy, diabetes, and high blood pressure
- Utilized Kaplan-Meier survival analysis, chi-square test for independence, student's t-test, mosaic plot, scatter plot matrices
- Used JMP software for statistical analyses

Results and Conclusions

- Kaplan-Meier analysis- patients on hormone replacement therapy have on average lower primary patency rates than patients not on HRT
- Chi-square test for independence: few significant p-values were found
- Reasons- small sample size: 68 patients
- Significance found in relationship between mental and mood disorders and graft patency

Future Research

- Current study designed to assist in future prospective studies on HRT and graft patency
- Help define parameters for future study: larger sample size, attention to mental and mood disorders