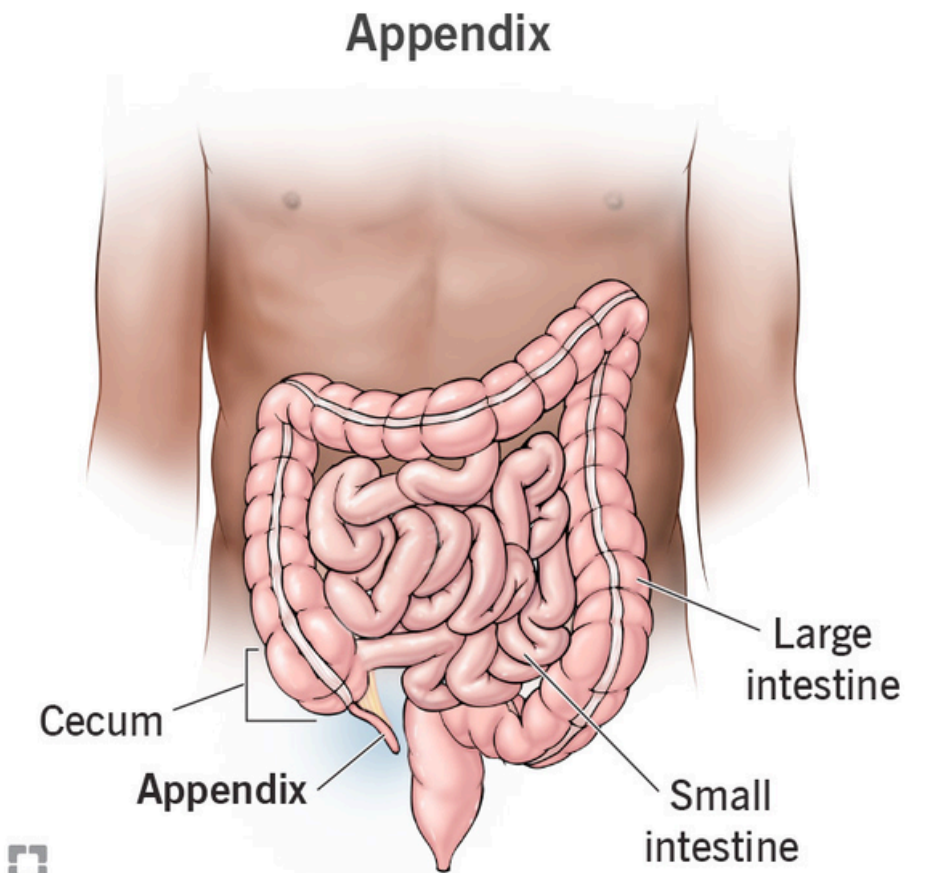


THE MOST DOWNPLAYED ORGAN HAS CONNECTIONS TO MENTAL DISORDERS.

The vermiform appendix has benefits as well as drawbacks.

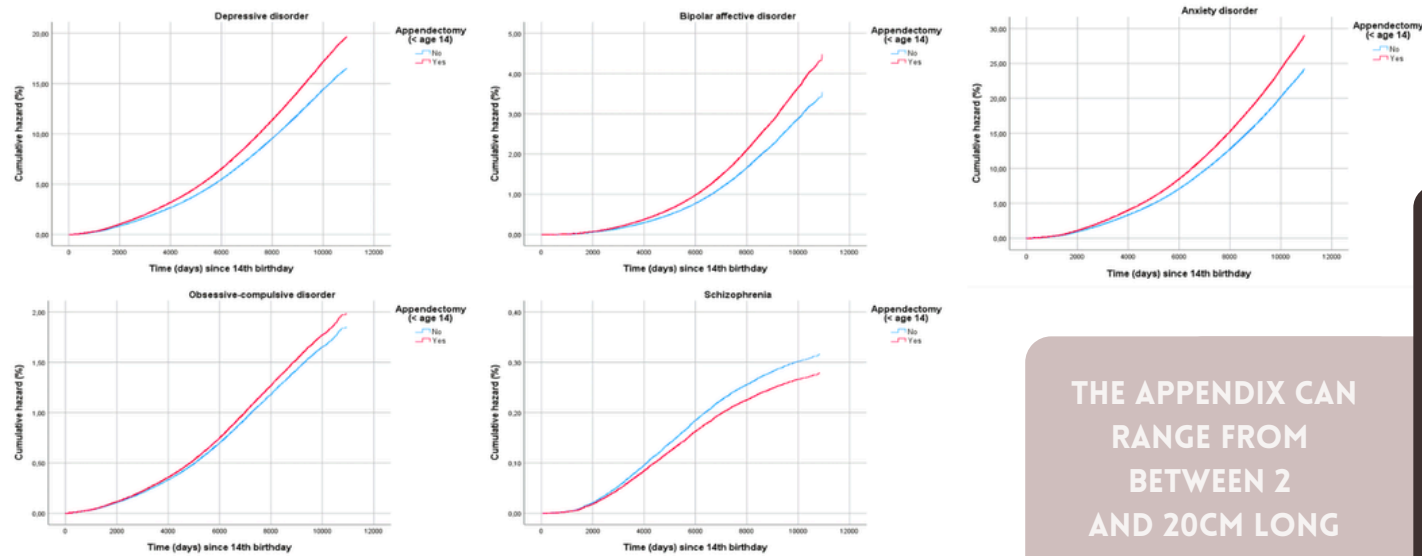
ABSTRACT

IT IS COMMON KNOWLEDGE THAT HUMANS CAN LIVE WITHOUT AN APPENDIX, AND MANY PEOPLE BELIEVE THIS STRUCTURE TO BE VESTIGIAL. A VESTIGIAL STRUCTURE IS ONE THAT HAS LOST ITS FUNCTION BUT STILL REMAINS. THERE IS ALSO AN ARGUMENT THAT SAYS THAT THE APPENDIX IS A REDUNDANT FEATURE OF THE BODY, MEANING THAT IT IS A BACKUP SYSTEM IN CASE SOMETHING GOES WRONG OR GETS INJURED. THE FULL IMPLICATIONS OF THE APPENDIX AREN'T FULLY UNDERSTOOD, INCLUDING THE CAUSE OF COMPLEX APPENDICITIS AND ULCERATIVE COLITIS. EXPERTS EXPLAIN THAT THE VERIFORM APPENDIX ACTS AS A "SAFE HOUSE" FOR BACTERIA IN THE GASTROINTESTINAL SYSTEM; THE APPENDIX KEEPS THE BACTERIA SAFE FROM THE COLON AFTER IT IS FLUSHED OF ITS MICROBIOME THROUGH DIARRHEA. RECENT RESEARCH EVEN SHOWS THAT THE MICROBIOME OF THE APPENDIX, AND BY EXTENSION THE GUT, CAN EVEN AFFECT THINGS LIKE MOOD, AND RISK FOR SERIOUS MENTAL HEALTH CONDITIONS LIKE DEPRESSION OR EVEN SEIZURES.

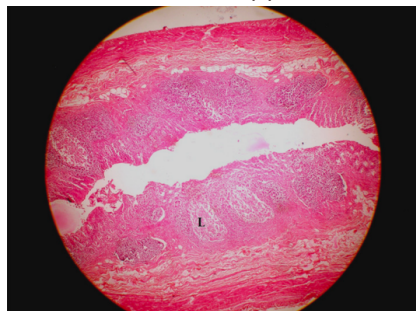


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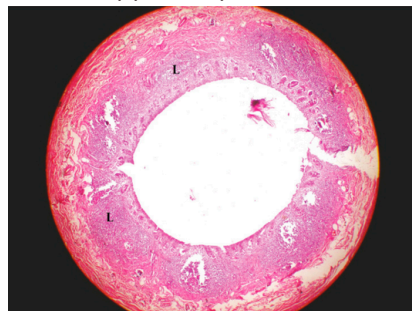
[FIGURE 1] KAPLAN-MEIER INCIDENCE PLOTS FOR THE RISK OF MENTAL DISORDERS DURING FOLLOW-UP IN INDIVIDUALS EXPOSED TO CHILDHOOD APPENDECTOMY BEFORE AGE 14 YEARS (RED LINE) AS COMPARED TO ALL UNEXPOSED INDIVIDUALS (BLUE LINE). EACH PANEL DISPLAYS THE HAZARD FUNCTION OVER TIME FOR EACH MENTAL DISORDER CATEGORY AS SPECIFIED IN THE HEADER. Y-AXIS DENOTES THE PROBABILITY OF INCIDENCE IN PERCENTAGE (0.00-100%) AND X-AXIS DENOTES TIME (DAYS) SINCE THE START OF THE FOLLOW-UP PERIOD (TIME AFTER 14TH BIRTHDAY)



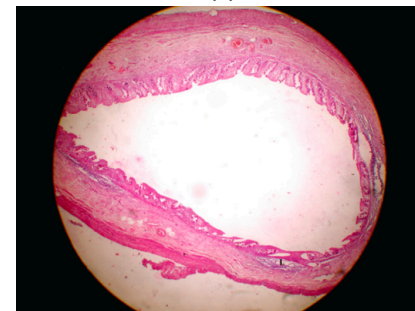
[FIGURE-2]: PHOTOGRAPH OF H/E STAINED SECTION OF HUMAN APPENDIX OF A 16 YEARS (AGE CATEGORY 1) FEMALE HAVING DIAMETER OF 9MM AND LYMPHOID FOLLICLES (L) NO. 11



[FIGURE-3]: PHOTOGRAPH OF H/E STAINED SECTION OF HUMAN APPENDIX OF A 35 YEARS (AGE CATEGORY 2) MALE, HAVING DIAMETER OF 7MM AND LYMPHOID FOLLICLES (L) NO. 7 (AGE CATEGORY 1)



[FIGURE-4]: PHOTOGRAPH OF H/E STAINED SECTION OF HUMAN APPENDIX OF 55 YEARS (AGE CATEGORY 3) FEMALE HAVING DIAMETER OF 9MM AND LYMPHOID FOLLICLES (L) NO. 3



THE APPENDIX CAN RANGE FROM BETWEEN 2 AND 20CM LONG

KEY UNDERSTANDINGS

- THE APPENDIX IS LOCATED ON THE LOWER RIGHT SIDE OF THE ABDOMEN AND IS CONNECTED TO THE CECUM
- THIS ORGAN IS NOT VESTIGIAL, HOWEVER, IT IS NOT NECESSARY FOR LIVING A HEALTHY LIFE
- THE APPENDICEAL WALL IS COMPOSED OF MUCOSA, SUBMUCOSA, SEROSA, DENSE LYMPHOID TISSUE, AND MUSCULAR LAYERS.
- THE APPENDIX WAS FOUND TO HAVE APPEARED INDEPENDENTLY AT LEAST 30 SEPARATE TIMES THROUGH EVOLUTION, INCLUDING PRIMATES, MARSUPIALS AND RODENTS.

HIGHLIGHTS

- PEOPLE WHO HAVE HAD APPENDECTOMIES BEFORE 14 HAVE SIGNIFICANTLY INCREASED RATES OF BIPOLAR, ANXIETY, AND DEPRESSIVE DISORDERS.
- IN A SMALL STUDY OF PEOPLE WITH DRUG RESISTANT EPILEPSY, PROBIOTIC SUPPLEMENTATION REDUCED 50% OF DRUG RESISTANT EPILEPSY
- THE APPENDIX SAFE-HOUSES BACTERIA THAT BOTH PRODUCE NEUROTRANSMITTERS, BUT ALSO BACTERIA THAT CAN HARM A PERSON
- AS PEOPLE AGE, THE LINING OF THEIR APPENDIX WEAKENS AND THE WALLS BECOME THINNER
- PATIENTS WITH ULCERATIVE COLITIS HAVE A DIFFERENT MAKEUP OF MICROBACTERIA IN THEIR APPENDIX

AREAS FOR FUTURE RESEARCH

- THERE MAY BE CHANGES IN THE GUT FLORA THAT SHIFT MENTAL HEALTH, PHYSICAL HEALTH, AND MENSTRUATION CYCLES
- DISEASE PREVENTION THROUGH LESS INVASIVE AND MORE ACCESSIBLE MICROBIOME SHIFTS THROUGH LAB GROWN FMT (FECAL MICROBIOTA TRANSPLANTS)
- THE NEUROLOGICAL IMPLICATIONS ON THE FLORA OF THE GUT
- BECAUSE THE LINING OF THE APPENDIX FACES, THIS COULD HELP US UNDERSTAND MENTAL HEALTH ISSUES WITH OLDER GENERATIONS
- WE CAN COME TO A BETTER UNDERSTANDING FOR THOSE WITH GENETIC DISORDERS

SOURCES

