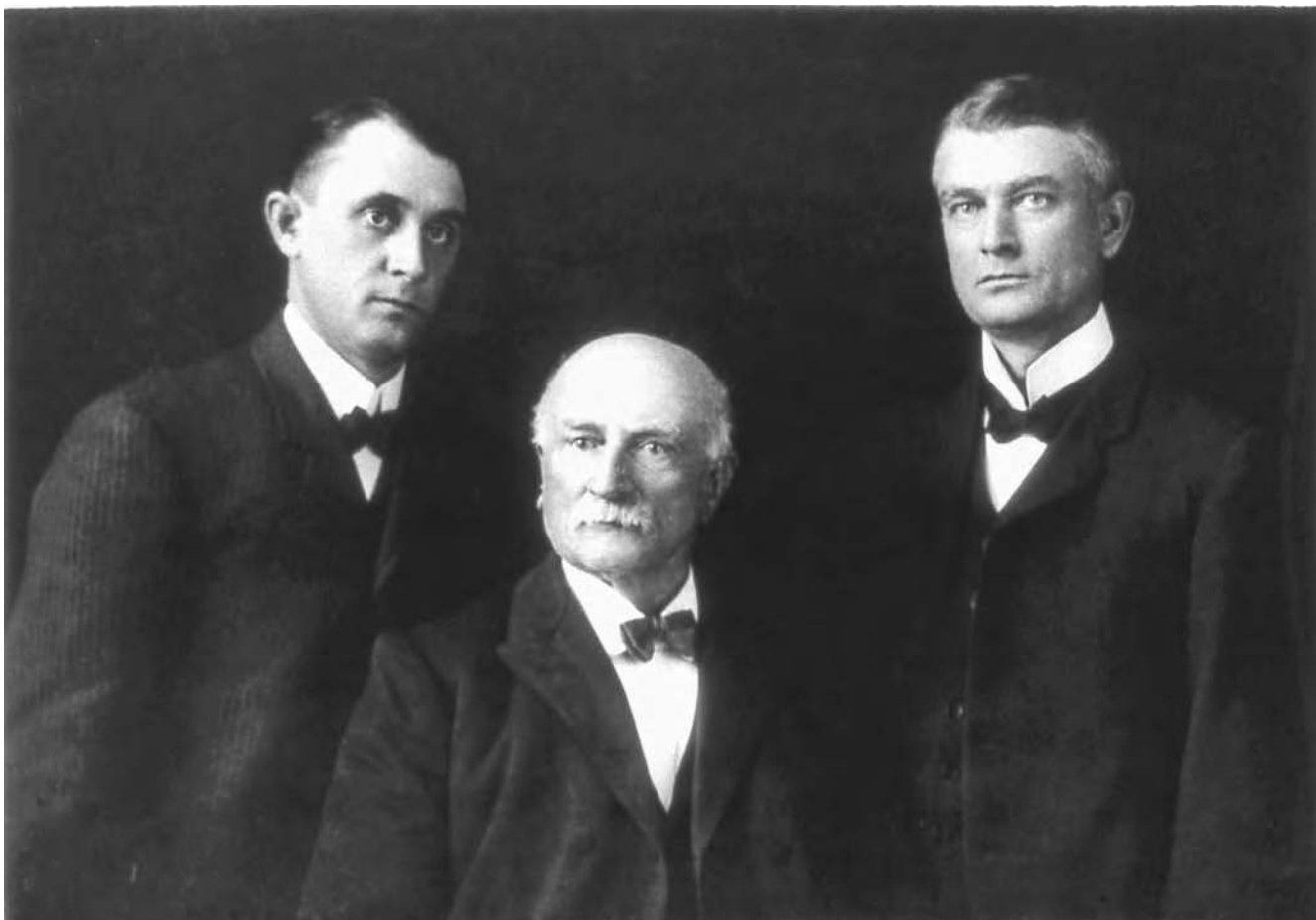


# *Sister Mary Joseph* and Mr. Hartdegin's cross to bear

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**T**he hospital bed in which Mr. Hartdegin lay was brightly lit by the setting sun flooding through the window at his side. My attending surgeon was standing between Mr. Hartdegin and the window. I could see the surgeon's shadow move across Mr. Hartdegin's belly with every breath that he took.



Charles H. Mayo, William W. Mayo, and William J. Mayo. Courtesy of the National Library of Medicine.

“Any pain here?” From the other side of the bed, my hands circled Mr. Hartdegin’s exposed abdomen. Unexpectedly, an X-ray had just revealed free air under his diaphragm, and Mr. Hartdegin was about to be taken to the operating room for an exploratory laparotomy. As a surgical resident, I was here with the attending to search for clues that might reveal what the scalpel would find.

Mr. Hartdegin flinched but shook his head with indifference. Frail and old-fashioned, he wanted nothing more than to return to his home in peace. But for his grandson’s concerns, he would have never come to the hospital at all.

My examination revealed nothing specific, and I placed my hands in my coat pocket. Grateful for the temporary reprieve, Mr. Hartdegin let out a deep sigh.

I pictured the operation to follow as the sharp edge of the surgeon’s shadow ran even farther up the surface of Mr. Hartdegin’s belly and divided it in half.

With a flash of insight that faded into sorrow, I turned to the surgeon.

“Sister Mary Joseph,” I said.

Unlike her eponymous physical finding, Sister Mary Joseph was a positive figure in medicine. She was born Julia Dempsey in 1856, near the banks of the Allegheny River in western New York. Shortly after her birth and before the beginning of the Civil War, the Dempsey family moved away from New York and settled near Rochester, Minnesota.<sup>1</sup> There, Julia and her six siblings were raised as part of a first-generation Irish-Catholic family.<sup>2</sup>

In 1878, at 22, Julia became one of three Dempsey daughters to devote her life to the church.<sup>1</sup> She joined Rochester’s Order of Saint Francis of the Congregation of Our Lady of Lourdes, taking the name Sister Mary Joseph.<sup>1,3</sup> She taught school and engaged in service projects until she was called to medicine about ten years later.<sup>3</sup>

Southern Minnesota then lacked an established general hospital. Instead, frontier physicians provided care to patients, often making visits by horse-drawn carriage. Unfortunately, this makeshift medical system proved inadequate when a tornado devastated Rochester in 1883.<sup>4,5</sup> As part of the disaster relief effort, members of the Order of Saint Francis teamed up with a prominent frontier physician to care for the injured in converted offices and hotel rooms.<sup>1,6</sup>

The overwhelming success of these provisional medical responders inspired a permanent collaboration between that frontier physician and the Sisters of Saint Francis. In 1889, they opened the first general hospital in southern Minnesota.<sup>1,4</sup> The physician was William W. Mayo—father of William J. and Charles H. Mayo, who also joined the infirmary (and who would later establish the famous Mayo Clinic). And among the first of the nursing volunteers, at age 33, was Sister Mary Joseph.

Sister Mary Joseph rapidly proved to be a flexible and



Sister Mary Joseph, 1912. Courtesy of the National Library of Medicine.

effective leader. Within six weeks of opening the hospital, she became head nurse, and three years later she was promoted to hospital superintendent.<sup>2</sup> Remarkably, she maintained the position of superintendent for over 46 years, until she was 82. During this time, she organized a successful nursing school and a national Catholic hospital association.<sup>2,7</sup> She also helped oversee nursing care and facilities planning at the hospital during its most crucial period of growth, as it expanded from 27 to 600 beds.<sup>4,7</sup>

In addition to her administrative aptitude, Sister Mary Joseph possessed remarkable surgical skills. She was keenly observant, technically proficient, and she had excellent surgical judgment.<sup>7</sup> Within a year of the opening of the hospital, William J. Mayo recognized her talent and trained her to become his first surgical assistant.<sup>2</sup> She filled this role for 25 years, until she was 59. During this time, she was trusted to start and finish cases without supervision.<sup>1</sup> It is said that she sometimes continued critical segments of William Mayo’s operations when he was occupied by questions from the gallery.<sup>8</sup>

Once, when asked a challenging technical question, Dr. Mayo replied, "I would consult Sister [Mary] Joseph and follow her advice."<sup>9</sup> Surely, the level of trust that existed between Sister Mary Joseph and Dr. William J. Mayo credits both her extraordinary talents and his ability to think beyond the chauvinistic limitations of the era.

It was while readying William Mayo's patients for surgery that Sister Mary Joseph made one of her most important and enduring observations. While preparing the abdomen of a patient for operation, she noted that some patients presented with palpable, peri-umbilical masses.<sup>1</sup> In the operating theater, she further correlated the presence of these palpable masses with the presence of intra-abdominal cancer. Since the peri-umbilical masses most often occurred in patients with advanced disease, she came to realize that these lumps indicated a poor prognosis.<sup>1,10</sup>

Sister Mary Joseph shared her observation with William Mayo, but the finding did not become associated with either one during their lifetimes. At one point, Dr. Mayo mentioned the presence of a peri-umbilical mass in an article that he published in 1928, naming the deformity a "pants button umbilicus."<sup>2</sup> But this name did not stick. It was not until 1949, 10 years after her death, that the finding became eponymous with Sister Mary Joseph. In that year, Sir Hamilton Bailey included her observation in the eleventh edition of his definitive compendium of diagnostic physical findings in clinical surgery.<sup>11</sup>

Over the years, numerous case reports have further characterized the link between Sister Mary Joseph's sign and intra-abdominal pathology. In 1967, Mark V. Barrow completed a meta-analysis of 667 of these cases.<sup>10</sup> The pathogenesis of the peri-umbilical mass in this series was found to be metastatic cancer, endometriosis, and umbilical cancer in nearly equal proportions (30, 32, and 38 percent of all cases, respectively).<sup>10</sup> While one-third of all cases of umbilical masses represented metastatic cancer, almost one-third of these (29 percent) had no identifiable primary lesion.<sup>10</sup> Most of the remaining metastatic tumors arose from primary lesions of the stomach (25 percent), ovary (12 percent), colon (10 percent), and pancreas (7 percent).<sup>10</sup> Among the cases of carcinoma which had metastasized to the abdominal wall, approximately 10 percent were found to involve the umbilicus.<sup>12</sup> On occasion, an umbilical mass is the only identifiable sign of an internal malignancy.<sup>10,13</sup> This finding typically presents as a firm, nontender nodule measuring less than five centimeters in diameter.<sup>12,14</sup>

Sister Mary Joseph remained actively involved in the infirmary until the end of her life. In 1939, at 82, she died of bronchopneumonia.<sup>1</sup> Having shared an extraordinarily constructive professional life with the Mayo brothers, their fates were evidently intertwined; within two months of her death, Charles H. Mayo died, and his death was followed two months later by that of his brother William.<sup>1,6</sup> Recently, the original surgical facilities of the hospital created by the partnership between Sister Mary's Order and the Mayo Family has been

renamed Joseph's Building in her honor.<sup>1,3</sup>

During her remarkable lifetime, Sister Mary Joseph made many important contributions to the clinic, to medicine, to humanity, and to her cross. Unlike the rest of her exceptional legacy, her eponym persists, today, as an inauspicious cross to bear.

The surgeon nodded his head in response to my words. He had seen it, too: at the depth of Mr. Hartdegin's sigh, the surgeon's own shadow was joined by a second shadow on Mr. Hartdegin's belly. It was subtle—not as sharp—but unmistakable, a faintly visible, marble-sized swelling just next to his umbilicus.

Outside the window, the sun had fallen lower in the sky. Closing his eyes, Mr. Hartdegin let out another deep sigh.

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